

**Information and methodological manual for teachers  
to support the educational posters on Caspian biodiversity**

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## FOREWORD

Dear teachers,

The training materials on biodiversity of the Caspian Sea, which you'll be working with, are the result of the project supported by the Darwin Initiative - a United Kingdom government funded initiative supporting biodiversity conservation throughout the world. More information about the Darwin Initiative can be found on [web address](#) and more information about the project can be found on the FSC web site [web address](#)

The Field Studies Council, an environmental NGO from the UK, has worked in partnership with the Caspian Environment Programme [web address](#) and with different partner organizations in each of the Caspian region countries:

Azerbaijan	Caucasus Regional Environmental Centre (REC Caucasus)
Iran	South Caspian
Kazakhstan	Regional Ecological Centre of Central Asia (CAREC, Almaty, Atyrau) and the public organization EcoObraz (Karaganda).
Russia	
Turkmenistan	

One of the key outputs of this project is five large posters, which we suggest as an additional training resource for teaching in subjects like biology, ecology and geography. The posters have been developed with the consideration of local conditions and follow a similar structure. Each poster has a separate sub-theme, which is shown through information blocks. This structure allows forming a separate training course, as well as using some blocks to explain relevant topics at the subjects of natural cycle according to the approved curriculum.

In this methodological and information manual we present the concept of using these biodiversity posters in school. In this manual we present a review of the biodiversity state of the Caspian Sea - you'll also find materials on sustainable development, education for sustainable development and biodiversity conservation. We'll tell you about some interactive methods, which can be used to conduct lessons; give examples of tasks and lesson plans for the posters. We hope that the list of the internet sites and printed materials, given in the appendix, will help you in your search for additional information.

The set of materials on biodiversity of the Caspian Sea has been approved and recommended for use in secondary schools as an additional training resource by:

- The Ministry of Education and Science of the Kazakhstan Republic
- The Ministry of Education of Russian Federation.

This project is a non-commercial one – all materials your school gets for free and for ever. However, we'd be grateful if at the end of this school year (2006 – 2007) you'll send us your comments, feedback and recommendations on using these training materials. Our addresses can be found on page

*We wish you success in your creativity!*

**Project team**

## **Darwin Caspian Biodiversity Education Project**

### **2. WHAT IS BIODIVERSITY AND WHY IS IT IMPORTANT?**

At the beginning, the life very simple. All there was consisted of single-cell creatures that made their own food by using water, atmospheric gases and sunlight (Photosynthesis).

Some of these creatures turned cannibals and mutated to feed on other creatures. This caused emergence of new life forms (species) and biological diversity began to grow. Some of the creatures slowly adapted themselves to variety of living conditions and occupied all the physically and climatically different places in the aquatic environments. Then life gradually moved from water to land and again the adaptation process allowed for the emergence of new varieties of plants and animals. The basic relationship between the creatures could simply be defined in terms of “who eats who?”, and this evolutionary process continued in form of a chain reaction and created the “Pyramid of Life”.

This pyramid shows the relationship between the species complexity with their “Biomass”. The simpler life forms are more abundant and situated at the bottom of the Pyramid, which is wide. As the species complexity increases, its position raises towards the apex. Great numbers of different types of simpler life forms (Bacteria, Phytoplankton, Zooplankton, etc.. ) occupy the bottom layers (at the base of the Pyramid) and not only provide food for each other, but also for the life forms that at the higher levels. In other words, most of these simple life forms are food for some of the more complex species at the upper layers. Such relativity continues upward towards the apex, where most complicated life forms are located, but their varieties and numbers are comparatively low. (see the diagram)

#### **Pyramid of Life**

There are some exceptions to this rule, and some very complex species feed on very simple life forms. The Sperm Whale is an example, which feeds on planktons. Notice that all the species in any one of the many types of “Ecosystems” are somehow dependant not only on each other, but on stability of their physical environment. The dependency on other species as food is often referred to as “Food Chain” or “Food Web”. It means that, just like links of a chain or connecting segments of a spider web, all the species in a given food chain or a food web, in order to survive, in one way or other, depend on one another.

Let’s see it this way. At any given time, based on the available food, new species evolved, which in turn, presented new source of food in the environment. This cyclic process continued for millions of years and diversified life on the Earth. The newcomers occupied the available “Niches” in the ecosystems and “Competition” for food and living space slowed down the evolutionary process and “Survival” became the challenge of life.

The life forms we know today are the outcome of complex evolutionary processes, and many minor and major local, regional and global changes which took place across the span of millions of years, and as a collection, all live in a state of equilibrium. Any change (no matter how small, temporary or permanent) in constituting elements (biological and/or physical) of any given micro or macro ecosystem will cause series of chain impact on its immediate environment. The impacts may become apparent in short, medium or long run, and in most cases are negative if not disastrous. Almost all human diet depends on different biological sources, meaning plants and animals, and some minerals, of course. To let life on the earth continue in a balanced, state and undisturbed natural equilibrium, man must protect the biodiversity. Each species, simple or complex, is playing its significant role in preserving the natural equilibrium in such delicate ways that are often beyond

our comprehension. Disturbance in the natural equilibrium would cause unknown and often unpredictable changes in our living environment with terrible consequences.

By polluting the environment, over-exploitation of resources, playing dangerous games with genes and many other unwise activities, Man has been damaging the biodiversity and consequently disturbing the natural equilibrium. Although some very serious damages have already been made to the environment, but scientist believe that by correcting our behavior and harmonizing our lifestyles with nature, we may become able reverse the present destructive trend and save the life on the earth, including our own.

### **3 WHAT IS SUSTAINABLE DEVELOPMENT?**

*“Sustainable development is not really about the environment, but about the ability of the human community to conduct constant reforms in the society, preventing/keeping the fragile balance between people and their natural life supporting system”. (Hamm and Multag)*

Our posters are designed to help you teach about the biodiversity of the Caspian Sea. To do this most effectively, you should teach about biodiversity within the overall context of sustainable development. One of the most important reasons for teaching about biodiversity is that an understanding of biodiversity and the need for biodiversity protection is important for achieving the survival of the planet through sustainable development.

So what is sustainable development? For more than 10 years the humanity has been discussing this topic. Discussion of sustainable development started in 1989, when the commission headed by Mrs. Brundtland, the Prime Minister of Norway, used this term for the first time. However, the real discussion of sustainable development started in 1992 after the United Nation (UN) Conference on the environment and development in Rio de Janeiro. There, the leaders of nearly all world countries and heads of the biggest transnational corporations agreed to strive for sustainable development, having marked the new stage in the development of human civilization.

As in the world there are many (according to some researchers more than 300) definitions and suggestions as to how define sustainable development, it was agreed to use the following:  
*Sustainable development is the development, which satisfies the needs of current generations, without jeopardizing the ability of future generations to satisfy their own needs.*

In other words, this is development which doesn't bear a threat to future generations. At the moment, it is no longer a secret, that our (human) way of living puts the existence of a person as a specimen under the threat, and according to the worst prognosis even existence of the Earth itself. However, there are opinions, that still it is possible to improve the situation and that this is only possible if we follow the main principles of sustainable development. Everything seems to be very easy – we should stop polluting the environment – in other words - “No to litter” on various scales – and that's it. The problem is solved. But, from sustainable development point of view, this approach is very one-sided. That's because sustainable development consists of three components – social, economic and ecological. Economic development (economic component) allows to satisfy our material and then hopefully spiritual needs; the social component – satisfies our spiritual and social needs; and ecological – defines the limits for economic and social development.

Then comes the question: “Who will provide this development?” and “How can an ordinary citizen from any country can take part in the process of changes for the best?”. In order to answer these questions and to transfer to real actions the concept of Agenda 21 has been developed. Agenda 21 – is the world action plan agreed by 179 countries. This is the guide for developing business and state policies and for making personal decisions in the twenty first century.

In order to make these action plans more specific and achievable, each country has developed, or is developing at the moment, its own Agenda, which follows the main statements of the global agenda. In addition, plans have been developed (or are being developed) at the local level. At the moment for example, Kazakhstan is preparing an Agenda 21 for the country. Preparatory work is also being conducted to develop Local Action Plans on Environment Conservation.

#### **4 EDUCATION FOR SUSTAINABLE DEVELOPMENT AND CONSERVATION OF BIODIVERSITY IN MODERN SCHOOL**

Everyone dreams about a happy life. However, we should remember that the only source for satisfaction of the current needs of the humanity and provision of high quality of life are the natural resources of the Earth. How can the humanity live within the carrying capacity of the Earth and maintain the possibility of happy lives for future generations? The concept of sustainable development has been developed in search for answers for these questions.

Irrational usage of resources, population growth, damage caused to nature, pollution of water, air and soil, social injustice – these are the signs that we don't live according to the sustainable development principles. This way can't last forever. A lot should be changed, and one of the key changes – change in education. Understanding of world's organization, discussion of what our sustainable future should be like and how our society can come to sustainable development is vitally important.

If you plan to use the suggested posters at your lessons – then you are a person who wants to promote positive changes. We hope that these few pages will help you to answer questions such as –

- Why is it so important to implement the strategy of education for sustainable development?
- How can your school find its place in the strategy implementation?
- What benefits can your school get if it starts the work on implementation of the strategy of education for sustainable development?

The concept of sustainable development doesn't require all people, who live today, to reject all benefits of civilization. The concept of sustainable development suggests that people take from nature only what is really necessary having carefully calculated the amount after which the nature can restore itself. We should use resources rationally avoiding the conflict with nature, people around us and far away, making reasonable decisions in relation to the current and future days.

Many principles of sustainable development are linked with the actions of society on a local level, and often with the actions of each person. That's why in many countries scientists and practitioners point to the vitally important role of education and enlightenment in the implementation of SD ideas.

*Education is seen as the tool of positive changes in relation of people towards the environment, their awareness and behaviour, as well as positive changes in the society in general (from quality of education to quality of life).*

**Education for sustainable development** – is not a new subject in the curriculum which tells the children about sustainable development.

**Education for sustainable development** – is the change of approaches to education.

**For a teacher** – it is a move from giving knowledge to creating conditions for active learning and obtaining of practical experience by children.

**For pupils – it is a move** from passive congestion of information to active search for it, critical thinking, usage of info in practice, communication and activity.

**For a school – it is a change** in policy of the team (pupils and teachers) management, resource usage, organization of interaction with local community.

These objectives can be achieved by improving all aspects of the school life.

In any subject and in organization of education for sustainable development it is possible to use the main principles of education for sustainable development. These are -

1. Interlinks – in the society, economy and nature.
2. Citizenship, rights and responsibilities of a person.
3. Needs and rights of future generations.
4. Diversity – cultural, social and biological.
5. Quality of life, equality and social justice.
6. Sustainable changes – development within the ecosystems' capacity.
7. Future – predictable and unpredictable.

If we help the students to form values, develop knowledge and skills, which they need to have in order to be active and informed citizens, who make their contribution into the better future, better world, then they should have the opportunity to use these in practice right now – in the process of education. This means the establishment of such an educational environment, where there is an opportunity to:

- Find the way in the world of information and think critically about it;
- Express and defend one's point of view;
- Make a justified choice between the alternatives;
- Work together, learn how to interact and agree, communicate and respect democratic decisions;
- Listen to and hear the others;
- Predict consequences of one's actions;
- Take responsible action in the life of school and society.

## **5 HOW TO WORK WITH POSTERS**

### **Teaching and Learning Methodology**

We are sure that you will be able to use the wonderful Biodiversity Posters you're your students without the need for the lessons described in this Guide!! However, if you do feel that you need some inspiration then you might find some of our ideas helpful.

We have given up to ten different teaching ideas for each poster. They are designed to give you ideas for lesson which can then be linked directly with the subject you are teaching. The lessons do link with each other and follow on from each other, but you don't have to teach them all. Just choose on or two that fit with your teaching programme.

#### **1. How to use the posters in teaching**

There are two ways of using the poster. The first is to use the poster as a large illustration – much as you would use a slide presentation or video – a kind of colour blackboard! To make the most of this it is best to get the class to come nearer the poster and stand around it. You can then ask

whole class questions and so on. Using the poster this way is ok – but please try not to use it this way TOO much.

The second way is to set group activities. Using the poster this way will mean that groups of children will come to the poster to look at the data and get information and then go back to their groups to discuss ideas. Please get in contact with us and send us your ideas as well – and then we can add these to the web site that we have established

You can use the poster to support your teaching about different subjects in the curriculum. Using the posters it is possible, not only to ask questions, but to put the learning process into an interesting form. The most interesting methods for children of the junior and middle school age, use games. These include research elements, practical work on cards and so on. Of course you can adapt the games as you wish and be creative yourself!

### **Student Centred learning**

If you are going to get across the messages of sustainable development – in other words – new thinking about the environment and biodiversity – then you will need to adopt new methods of helping students to learn. New approaches to teaching and learning.

To significant extent interactive methods correspond to the requirements of ESD. These methods allow children to:

- Take active part in everything, what happens at the lesson
- Explain others, what they've understood;
- Not to learn about discoveries of others, but discover themselves
- Realize results of the lesson for the group and himself/herself.

The main principle of interactive work with the group is a bigger involvement of the students into the thinking work and giving them an opportunity to find the answers for themselves. According to some interactive approaches to teaching methods, a person best learns the information and uses experience obtained himself rather than those that are told to him or her. Linked to that it is more effective to use the approach based on the learning cycle rather than a simple scheme “listening to/reading the information, learning of the information and checking of knowledge”. There are several options of the learning cycle, but all of them are based on one scheme “experience – emotions – thinking about what happened – looking for parallels in life – usage of this experience in life”, a simplified options – “action – reflection or review and – planning”.

In order to make the group work more effective and interesting or when developing activities and planning the task, this section gives some general and specific ideas about teaching and learning - some methods you can use when working with your students. Of course – we have not listed all the activities you could use – but we have listed some of the most important ones.

## **2. Some general student centre learning approaches**

### **(a) Brainstorming**

The rules of the brainstorm are not complicated, but it is a very effective way to gather and record the opinions of everybody. You should select the topic of the discussion (what are the causes of biodiversity loss in the Caspian for example) after that on a big piece of paper or blackboard write down all the ideas in order they are being expressed by the pupils. It is very important that all the ideas are written down as the pupils have formulated them. In the process of idea collection ideas should not be discussed!! If the idea is not clear, then put an asterisk, when the brainstorm is over

the author explains what s/he meant. When all ideas have been written down it is necessary to check if the group is clear about everything. Further on, if necessary, similar ideas can be grouped.

**(b) Snowball.**

Give the topic for the activity. First, everybody thinks about this topic individually and writes ideas down. Then the students work in pairs – they share their ideas and put them down. Similar ideas are written down just once. Then the students form the groups of 4 and so on – max 8 people in the group. Then the group (8 students) puts down each idea on a separate piece of paper, sticks them on the flip (big piece of paper) or the blackboard and presents ideas.

**(c) Mapping.**

This method allows getting information from children using the fact that many children enjoy drawing (especially young children). The class is divided into small groups; the groups have to draw a map. The map should reflect information about a certain locality or certain problem. For example you can take students outside and ask them to draw a sketch map of an area and mark on the areas they like or dislike, the areas that are friendly and unfriendly, and so on.

**(d) Cards.**

The approach of this activity is as follows:

- the students get cards (ordinary pieces of paper);
- the students are asked a question;
- everybody writes an individual answer on the card;
- the students get in groups of 2-3;
- they write a general card, which reflects opinion of the group;
- then groups work in pairs and the process is repeated;

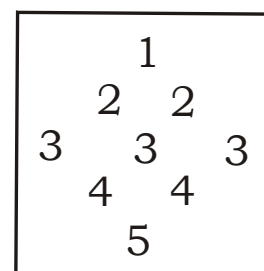
As the result, the students make one (or several – if it is not possible to come to a general conclusion) general answer.

**(e) Role plays.**

These are activities in which participants of the group have to present themselves in the role of somebody (or something). Such games develop creative thinking, imagination, presentation skills and express attitude towards a problem. You have to make sure that the pupils have enough information to be able to play the role well enough.

**(f) Diamond-shape ranking.**

The resources you will need are a set of 9 statements or sentences made on cards and cut separately. They can be statements about any topic that you are studying. For example – what are the causes of biodiversity loss in the Caspian. They are put into an envelope for each pair of the participants.



The process involves grouping pupils and each group gets an envelope with the 9 sentences. The task of each pair is to rank these sentences in the shape of a diamond (see a picture). The sentence, which is the most important or correct in the view of the group, is put on top of the diamond. The two next in significance sentences are put on the second equal position. Three next sentences are put on the line, which goes through the middle and takes the third place (again they are equal). The next two – on the fourth place. The sentence put on the bottom of the



diamond is the one, which the pair considers as the most significant or correct. When the pairs have fulfilled the task they are working in groups the ranking is compared with others and a discussion takes place.

**(g) A few words about the work in small groups.**

The number of non-ordinary ideas and constructive suggestions in a lesson increases if small groups are created for a short time to discuss a specific issue/question – small groups or “buzz groups” (an analogy of a bee hive – when participants of small groups begin to work - the buzz of voices reminds you of bee humming). Groups should be between three and seven in size.

These small groups work at different tables or go to different rooms (you can use the recreation area, corridor). All groups discuss a certain issue/question over a certain period of time. Then the groups summarize their ideas or solutions. The work is ended by presentations to the whole class.

The division of the class into small groups/buzz groups gives everybody an opportunity to take part in the discussion of issues and making decisions. This strategy helps many students to overcome constraint and shyness in the new situation.

It is important that the pupils are given a structured question to discuss and an output to produce otherwise discussions can become ill disciplined. And don't worry if when you try this for the first few times there is a lot of noise and the pupils seem too noisy. When you have tried the method a number of times, pupils become used to and work hard.

**3. Some specific teaching games you can use**

**(a) Game “What do we know about Caspian biodiversity?”**

The goal is to engage the children into the process of studying of the poster content.

Each student working individually or in groups, looks at the posters and prepares one question, the answer to which he or she knows. The student assesses its difficulty in points (for example, 1 to 5 points). The student writes the question on a post it note. The students can cut the post it notes into interesting shapes if they want to. For example, if the question relates to the life of animals, the student cuts the shape of an animal, if it is a plant – then a leaf and so on.

Before the start of the game, the students put their questions on the poster using scotch, stickers, etc. The class is divided into groups and selects the order of answering. Then the children select questions according to the points and provide answers. The team, which gets the most points wins. The teacher gives marks to the children, who gave correct answers and got a certain number of points. This game suits poster 2 best.

**Note:** The questions may be not only about relations between the objects of the ecosystem, but other topics as well, such as loss of biodiversity and so on. In this case, you can ask the children to put the question at the object of the Caspian ecosystem. On a piece of paper present the marine environment with the help of the blue film; show the surface layer, bottom and coastal zone. Before the start of the game, the children put their questions on a corresponding place; the game starts in the same way as in the first case. For example, at the biology or ecology lesson, when the food chain has been studied it is possible to conduct the following short game. The class is divided into groups and they have to find examples of food relation on poster 2. The group, which finds the biggest number of pairs linked by food relations, wins in the game.

**(b) Quiz game**

The goal of this game is to check the student's knowledge of the posters.

Using Poster 2 you can organize a quiz. You can use questions on Poster 2 from the methodological manual as tasks for the quiz. Make a spot of clean Caspian water (made out of cardboard or transparent film) for each correct answer - it will be a motivation for students to take active part. The winner is a student/group, who gets the biggest number of drops. He/she will be a Caspian Keeper. You can develop any idea for the game.

### **(c) Environmental Discussions**

The goal is to engage the emotional and learning element of student's consciousness to get them into the problem.

This form of work can be used when studying the topic "Reasons of Caspian biodiversity problems". The class is divided into 2 groups: supporters of a reasonable attitude to nature and supporters of consuming approach to nature. In the discussion representatives of both groups defend their points of view. It is important to control that arguments presented by each side are persuasive enough – in other words - well justified.

You can obviously be creative and organize discussions about any poster - selecting your topic carefully.

### **(d) How does biodiversity work?**

The goal of this activity is to introduce the children to the role that biodiversity plays in the sustainability of ecosystems. For example, biodiversity on our planet has never been stable. In the evolution process changing environmental conditions some species disappeared from the biosphere. If these processes happened quickly, then biological balance was broken and population of some species increased rapidly and for others – decreased quickly and the functioning of the ecosystem ceased as it couldn't provide conditions of organisms to live in. If those changes happened slowly then an ecosystem could continue functioning and provide life for other species. Biological diversity of species, which live in the ecosystem, ensures sustainable state of the ecosystem.

As you explain the importance of biodiversity tell the class they have 5 minutes to look at the poster – after that it will be covered and working in team they have to list down all plants and animals they have seen on the poster and name them. Different tasks could be given for different posters

## **6 FIELDWORK**

### **Doing Fieldwork**

Fieldwork – or taking children and young people out of the classroom is a very important part of learning about biodiversity. Biodiversity is on the doorstep of most schools in the region – and even if your school is not so near the Caspian Sea, there are still activities you can do outside with your pupils.

### **Practical methods of nature study**

Nature is studied by various practical methods. The main one are –

Observation and recording

Experimenting or testing, and  
Measurement.

Observation is one of the methods to study nature. This method is probably the safest for nature, as it is based on visual study/observation of objects, events, and so on. In order to make events or objects closer the researcher can use optical equipment: magnifying glass, microscope, binocular, telescope, and Photo and video cameras are used to fix events and objects. Observations can be regular (periodical) to collect info about any object of nature, event, etc. In this case results of observations are generalized, based on that conclusions are made, which become valuable scientific information. In this case observation is called monitoring.

The kinds of things you can observation are -

- Study of objects and events of natural ecosystems,
- Study of interlinks between objects of ecosystems,
- Study of impact of one event or object on the state of the environment in the ecosystem,
- Study on an ecological problem
- Study of human activity impact on the nature ecosystems (or objects),
- Collection of information about an object.

One good topic to investigate is related to birds – this is easy for any teacher in any school to do. Part of our Darwin Project will provide teaching resources and idea for wetland bird studies – so look out for these materials to be produced. But in the meantime – here are some general suggestions for how to organize a bird study.

## **1. Examples of seasonal bird observations**

In early spring tell the children to write down the first observation with the migrating birds and ask them to draw the birds they like. In this way, during the spring season you can collect information about types of migrating birds and permanent “residents” and prepare a conference based on the results of the seasonal observations.

If observations are conducted occasionally and irregularly, they can be used as an introduction to the object or event of nature. However, even single observations conducted at the same time in different places can provide valuable scientific knowledge. Usually, such observations are conducted at the initiative of a scientific organization, for example Bird Conservation Council of Russia or Bird Life International.

You can prepare observation cards in advance and organize nature observations. If observation is done by the whole class, then it is reasonable to divide children into groups. Each group will get a different object of observation and a special task. It is useful to give each student or group a data collection form for them to record their observations.

Example of card for bird observation

- Your Surname, name, patronymic
- Date and time of observation
- Place of observation (settlement)
- Habitat (underline): Seaside, Bank of the river, pond, lake, Forest , Agricultural land
- Park in a settlement , Bog Other (put down)

You should make a note of how many birds you have counted and what kind they are – of you can recognise them.

Please note the species, which had the biggest number of them in the Table below

Name of type/specimen	Number

## 2. Some tasks to start off the fieldwork

We recommend that you start field observation and work with identification keys with a few simple tasks. They will help children to get the first skills of observation and children will get used to studying outside the school.

### (a) Birds in the City

This activity is suitable for pupils aged 11-14. At the end of one of the lessons, ask the children to imagine the city without birds. Jolly sparrows don't twitter, tomtits don't get into flocks, doves are not seen anywhere. This thought makes some sad, doesn't it? However, it is very difficult for birds to survive in the modern city, especially in the new micro-raions. In the newer raions construction there are very few if any at all green areas; but the trees and bushes are very important for birds. They give a shelter from enemies, a birds' canteen and place for nesting. The home task for the children – "draw or take a picture of places in the city, where birds feel good".

When the first part of the task has been checked, the class has to fulfill the following observational task. Most pupils could do this quite easily

Majority of birds in the city don't live on their own, but in groups – flocks. Together "wing to wing" it is easier for them to survive - defend against enemies, find food and keep warm when it is called. We suggest that you observe a flock of birds: sparrows, doves, seagulls, ravens. Present your observations in your notebook according the following scheme:

#### **My observations:**

Date (date, month, year)

Time of day:

What was the weather like:

Place of observation:

My observations:

1. Number of birds in the flock:
2. What did the birds do (resting, eating, settling down for sleep, etc):
3. Was there flock the leader-bird in the? If "yes", how did you get that?
4. What unites birds in the flock?
5. How do birds communicate between themselves?
6. Other observations:

Suggest an action plan to attract birds into your yard or pre-school territory.

### (b) Bird Canteen

This activity is useful for pupils aged 11 to 12 years and the goal is to study the main kinds of birds that live next to people. The main tasks involve making birdfeeders and choose forage; identifying the types of birds which visit birdfeeders; Identifying the number of birds which come to birdfeeders at different times of the day and to find out birds' preference in food

The materials you will need as a teacher are - sketches of birdfeeders, scissors, glue; plastic bottles, cardboard boxes, tetra pack boxes (milk and juice)

Ask the children to name all species of birds, which live in your raion. Suggest several options of birdfeeders to the children; discuss which are more appropriate.

Time of day № birdfeeder	Morning	Midday	Evening	
1				Number of birds and their species in the canteen
2				
3				

Warn the pupils that birds don't start actively visiting birdfeeders immediately. Ask the pupils to make the following conclusions:

1. What birdfeeders were most visited? What has determined that (construction of the birdfeeder, its location, etc)?
2. What species of birds visited birdfeeders most often?

It is important! Please remind the students to fill in birdfeeders with forage after the end of the observation period. The birds get used to the feeding place very quickly. Expectation of food on a usual place on cold winter days might lead to the death of birds.

### (c) Games and activities that you can conduct during field observations

The games and activities presented in this section give children an opportunity to have rest during the field observations, but stay in this wonderful process of learning the nature. Sometimes observation can appear not so exciting for pupils because there are periods when not a lot seems to happen so games can fill the gap and keep pupils learning!!

- **“Grandchildren of Carl Linnei”.** Participants invent names for types of animals and plants. For example they add adjectives to the name of the nature object so that the name provokes positive emotions (for example, noble deer, weeping willow). Here you can use elements of the role play. “You’ve been a member of the expedition and discovered some new animals and plants unknown to the science. Now you should name them...”. If they ask who Karl Linneus is you can say that he named lots of plants and animals in the past and standardized the naming system.
- **To live or not to live?** Divide the class into several groups, 3-4 pupils in each. Ask them to answer the following question: “If you had an opportunity to get rid of any living organism, which lives on the Earth, who would that be? Why?” When each group has presented their answer, ask the students to do the reverse: write down the list of reasons, why it is necessary to conserve different species.
- **The disappearing Forest.** If you have a class of 30 pupils ask five of them to stand spaced out in an area. The other children are birds. They have to run around and when you clap you hands they have to find a tree to land on. Only four birds are allowed per tree. At your command (for example,

signal that the night has come) the birds have to find a place for the night and nesting on a tree. Each “tree” has got just four branches – hands – and therefore can accommodate just four birds.

The next stage – day comes – the birds leave the trees. Quietly whilst the pupils are running round – take away one tree - a “tree” has been cut down. See what happens when you clap your hands and the birds have to land – some are without trees. You can discuss what the birds can do - and what happens in real life. For example, if more birds land on a tree then they eat the food and the tree might die and birds not get enough food.

Ask the “birds”, which left the game because there was no space for them in the forest, how they felt? Is this game like real life of birds? What has it got in common and what is different?

## **7 BIODIVERSITY IN THE CASPIAN**

### **Biodiversity**

Very simply, Biodiversity means the diversity of life – there is a definition on Poster One that comes from the International Union for the Conservation of Nature (IUCN)

However, there are different ways of measuring biodiversity. Usually the measure of biodiversity is the genetic diversity found in plants and animals. These are some times called genetic resources. The biodiversity are in forests, grasslands, wetlands, mountains, desert and marine ecosystems. But you can also describe biodiversity in terms of the number of different plant and animal species or the diversity of different groups of ecosystems. For example, in an ecosystem there may exist different landforms each of which supports different and specific vegetation. Ecosystem diversity is difficult to measure since the boundaries of the communities. Biodiversity can also be described at different scales such as local diversity, national or regional biodiversity. Variation is a law of nature. Biodiversity is the degree of variety in nature.

Biological diversity is important to protect. For example, biodiversity provides the basic biotic resource that sustains the human race. Our national food security depends on our ability to conserve all our biological wealth. However the present day drastic changes in environment and habitat due to population explosion and unmanaged development activities are so unnatural that the species are not getting full liberty of time and space for their survival and adaptive radiation, therefore resulting loss of biodiversity which is a global crisis. On a global scale between 1600 and 1950 the rate of extinction went up to one species every 10 year. Currently it is perhaps one major species every year.

Every species has its importance in its ecosystem as wild plant or animal and it can provide new genetic material for improvement. Therefore the consequences of biodiversity loss will be wide ranging and will affect the over all sustainability of the ecosystem. Biodiversity less will disrupt food chain and food web leading to disturbances of ecosystem.

Around the Caspian sea there are many different ecosystems. Coastal zones, wetland, marshes, estuaries, rangelands, forests and many different dependent species. All these support a unique biodiversity – and a biodiversity which is in decline. Hence the importance of teaching about biodiversity and biodiversity protection to schools students and the next generation.

### **Biodiversity in the Caspian**

Here are some questions you could use with your students to get them thinking about biodiversity in the Caspian and why it is unique. The words in bold are technical terms that you will have to explain to your students or present to them in a simpler form – depending on the age of students you are working with.

- Why don't we have Giraffes and Elephants in our region?
- Why are the kinds of Sturgeons we have in Caspian not found in the wild anywhere else?
- Why is Caspian Seal **endemic** to the Caspian Sea?
- Why is the Caspian Tiger now **extinct**?
- Why do so many different kinds of birds **migrate** to the Caspian **wetlands** ?

### **Because...**

Giraffes and Elephants have **evolved** in an environment with some characteristics that are not found in Caspian Area. We don't have the right **habitat** for them in our region. They can only naturally survive and **reproduce** in the **ecosystems** they are **adapted** to.

The Caspian Sea is a very special place with unique environmental characteristics. It was once a part of a great ancient ocean called Tethys and then separated from the rest of the world some 30 million years ago, and continued its evolution in isolation. The evolved Caspian Sea turned out to be different from other bodies of water in various ways;

1. Geographical Location
2. Geological Formation
3. Hydrological Characteristics
4. Water Level Fluctuation
5. Climate
6. Biomes
7. Flora and Fauna
8. Distribution of Human Societies, Cultures and Socio-Economic Conditions
9. Natural Resources
10. Diversity of Habitats

As the result of such differences, the collection of life forms in the Sea itself and the surrounding environments is unique and is referred to as **Caspian Biodiversity**.

During past millions of years, all these life forms adapted themselves to all the interactions that were taking place between the plants and animals and their physical environment, which went through drastic natural changes in different periods.

The Caspian could be categorized as a **stable environment** until about one hundred years ago, but accelerated human **activities** and associated **development** has altered the environmental stability to such extent that great concern has developed for the integrity of the Biological Diversity of the Caspian.

The diversity of life forms in the Caspian Sea and its surrounding environments indicates the existence of a variety of ecosystems that have evolved in harmony with the physical and climatic nature of the general and local areas. Many species of migratory birds found suitable wintering or nesting habitats in the rich wetlands and extensive estuaries associated with the Caspian. Today, three major flyways are recognised to overlap each other in Caspian area and millions of birds either nest, winter or stage in the area annually.

Some alien species have found their way to the Caspian Sea mainly through the ballast water of the ships that use canals to travel from Black Sea and Sea of Azov to the Caspian Sea and back. Some

other species were intentionally introduced to the area for economic purposes. Some of these alien species have proved to be of serious threat to biodiversity of the Caspian and endanger the life of some native species.

Many factors have negative impacts on Caspian biodiversity and include:

- Pollution (Industrial, Chemical, Agrochemical, Hydrocarbon, Wastewater, Solid Waste...)
- High rate of Environmental Illiteracy and lack of awareness among local communities
- River Flow Control (Dams, Canals)
- Poaching and Over-harvest of Resources
- Deforestation/Over-grazing
- Exotic/Invasive species
- Water level fluctuation
- Development and Habitat Destruction
- Climate Change and Global Warming

The fact that “each species plays a well defined and important role in the ecosystem it lives in” is well understood. Each species is also an elemental and integral part of the Biodiversity of any ecosystem, and termination of its existence can cause chain reactions of unknown effects on human life and livelihood. The necessity to preserve biodiversity is now defined in national and local constitutions of many countries, and has been incorporated in many forms in various regional and international treaties and agreements.

At an international level Caspian Biodiversity is the subject of a protocol of the Caspian Environment Convention, known as the Tehran Convention of 2003. According to the Article XX of the Caspian Environment Convention, each of the five littoral states are obliged to plan and implement programs and projects to protect, preserve and rehabilitate the Biodiversity of Caspian Sea and its surroundings.

## **8 ACTIVITIES POSTER ONE**

### **What is Biodiversity and Why is it important?**

#### **Description of the Poster**

This poster shows a variety of sources of information designed to present data that children can use to find out about what biodiversity is and why it is important. Biodiversity (biological diversity) is the diversity of living organisms, ecosystems and ecological processes, the chains of which they are.

#### **Biological diversity can be divided into three categories:**

- Genetic diversity, which means diversity of genes within one specimen;
- Diversity of species – diversity of species within one region;
- Diversity of ecosystems – diversity of habitats, biological communities and ecological processes in the biosphere.

All three levels of biological diversity make the single system. The reduction of genetic diversity, which happens as there is no “inflow of fresh blood”, can lead to the death of a species, thus reducing biodiversity of a particular region. Biological diversity is directly linked with the sustainability and stability of ecosystems and the biosphere in general to various disturbances, including those caused by human activity. A decrease of biodiversity leads to the destruction of the established ecological links and degradation of natural communities, their inability for self-maintenance and finally, to their extermination.

### **1. Background to Biodiversity around the Caspian**

The goal of these activities is to give an understanding of the *physical background* to the Caspian Sea.



These activities help children to find out basic information about the Caspian Sea. The children have to work in groups and imagine that they are writing a short entry for an Encyclopaedia about the Caspian Sea. Their short paragraphs has to contain basic statistics about the Caspian Sea – for example it’s widest point and how long it is, the deepest point and shallowest, how many countries border it, the names of the major rivers flowing into the sea and so on. If you want to provide them with specific information they need to include then you can make you own list depending on which geographic skills you want to develop. For example, children could measure the length of the coastline, the area of the sea – or they could draw scale cross sections through the sea. The children can also use other maps in an atlas related for example, to temperature and rainfall to research other characteristics of the Caspian.

They should use the map and the satellite image to do this.

## 2. Ecosystems around the Caspian

The goal of this activity is to identify the *different ecosystems* that surround the Caspian using satellite images.

Ask the children to work in groups and look at the satellite image of the Caspian Sea. Explain that this satellite image represents vegetation - and then ask them the guess what kind of vegetation the different colours mean. You can then ask them to make a sketch map to show the different zones of vegetation around the Caspian. You can ask the children to look at the two images X and Y and suggest which parts of the Caspian these come from. The green wetland area is from Iran, and the dry rocky area is from Turkmenistan.

### What is an Ecosystem ?

An ecosystem is the name given to the dynamic interactions between plants, animals and other living things and the physical environment they are in. The size of an ecosystem can be anything from something quite small – like a pond – to something much bigger – like the Caspian Sea!

## 3. Biodiversity – What is it?

Goal – to give an *understanding of what biodiversity* is.

- (a) Ask the children to list the names of as many animals and plants they can think of around the Caspian – how many can they think of?
- (b) You can ask the children to look at the poster and guess what the word “diversity” means. Let them work it out and ask them to explain their answers using the information on the poster. You can also then ask what the word “bio” means. List their ideas on the blackboard and after getting some ideas put the two words together. A definition of biodiversity is on the poster.
- (c) Ask the children to work in groups to look at the bar graph. You can give them a copy of the bar graph – Resource S1. Explain that begin with the graph looks quite complicated. Give the groups the task of explaining what this bar graph tells them about the biodiversity of the Caspian.

### Biodiversity Some Background:

The word is a new one – first used in 1985!! The simple definition is “the variation of life at all level of biological organisation”. The 1992 Earth summit defined it as “The variability among living organisms from all sources including terrestrial, marine and other aquatic systems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems” There are three levels of biodiversity – Genetic Diversity, Species diversity and Ecosystem Diversity. The protection of biodiversity is considered to be very important because ecosystems provide resources and services to people, and because any reduction in biodiversity has knock on effects on the other parts of the

ecosystem that rely on them. Diversity is a “good thing”

#### 4. Why is Biodiversity important - Biodiversity and Natural Resources

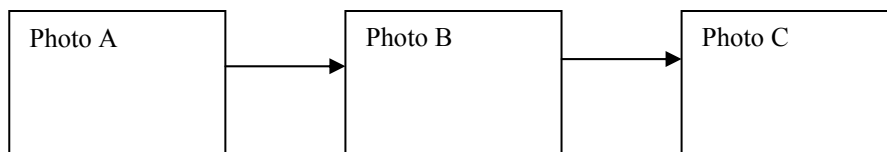
The goal of this activity is for children to understand how much *we rely on natural resources for our survival*. Eco systems and biodiversity provide us with nearly all the *products* we need to live - without nature we would be dead!

Ask the children to work in groups and look at the picture of a family having a meal on the poster. They have to make as long a list as possible of things they can see in the photograph that come from nature. They have to be things that can be seen. You can turn this into a competition if you want to. If you don't want to use the photograph then you can ask them to look at each other and the classroom – you should make sure that you bring one or two extra things into the classroom such as a jug of water and some medicines.

#### 5. Why is Biodiversity important - Biodiversity and Ecosystem Services

The goal of this activity is for children to understand that biodiversity and *ecosystems provide us with services* - as well as the products of the previous activity! This is quite difficult concept for children – but not too complicated. Basically nature provides us with water (a product or resource) but it also provides us with clean water (a service). The problem with the way we are living our lives at the moment is that we are destroying both of them!!

Ask the children to look at the pictures A, B and C. These show water being purified by the ecosystems and is a good example of an ecosystem service. Ask the children to complete a flow diagram like the one below to explain what is happening in each of the photographs.



Then ask them to say what would happen if the wetland was drained – and what the likely response of people might be. The answer is that probably – because the wetland purifies the water – that there would be a need for a costly water purification installation of some kind. Costing a lot ore than the wetlands.

You can also ask the children to look at the map of the migratory bird flyways (like bird highways in the air) and explain (or ask) that the Caspian Sea is important not just for natural resources and ecosystem services for people – but also for animals!

#### 6. Why is it necessary to support and maintain biodiversity?

The goal of this activity is to demonstrate the value of biodiversity to the students. You should write several phrases on the blackboard and ask the students to copy them and complete them in their own words. Students could do this in groups, and if you do the activity with younger students you might give them the end of the sentences and ask them to match them with each other. The answers to the sentences can be on the poster.

*Supporting biodiversity is necessary for many reasons:*

- First of all, it is important to remember that each species and each ecosystem has got the right...
- The life of many species depends on others – the disappearance of one species can lead to....
- A human being, as a biological species, depends on other species because of the need in ...., as well as in such “ecological services”, such as...
- And finally, each specimen and each ecosystem creates the beauty and richness of the world around us.

## 7. Birds and the Caspian

On the poster you can see a map of what are called “Flyways” - these are basically bird highways that they migrate long. Look at the map on the poster and work out how many flyways pass over the Caspian Region? When the birds are flying over the Caspian – how do you think they use the resources of the Caspian? This shows that the biodiversity of the Caspian Sea supports the biodiversity of animals that live outside the Caspian Region. The world is linked together.

## 8. God and Biodiversity

Look at the two quotes from religious books that are on the poster. Many people believe that God created the earth and created the biodiversity we find in it. Other people believe that God did not create the world and that evolution explains the variety of species. You can ask the class what they think of these two views and which they support and why. You can also ask them which of the viewpoints is most motivating to care for the biodiversity and perhaps ask them “Well if God and Allah tells us to care for the earth – WHY are we NOT doing it very well!?”

## 9. Concluding activity

The goal of this activity is to encourage children to *debate and defend* their views. You could also do this activity after doing some of the activities linked to Poster Two. It would be a good concluding activity.

Ask the children to work in groups. Read out the text below to them. This is a letter written to a newspaper. Ask them to imagine that they are going to reply to this letter with another letter that will also be published by the newspaper. What would they write?

“Dear Sir, I am writing to say that I think that the recent action of the environmental groups in the Caspian should be stopped. They are protesting that the biodiversity of the Caspian is declining. This may be true – but I ask – is it important? For example, there are millions of species of insect on this planet – why does it matter if their number declines by one or two species. The same is true of birds. There are thousands of species. If we lose one or two species then I do think this is a problem – there are lots left!”

## Curriculum Links

### References

These have to be written by the National team in each country – just a few lines

## 9 ACTIVITIES POSTER TWO

### Description of the Poster

This poster shows a cross section through a “typical” area of the Caspian Sea from the shoreline to the deeper water of the Caspian. Please note that the animals and plants on the poster are not always to scale with each other!! The drawings of the plants and animals are accurate however. The overall goal of the poster is to show the relationships between plants and animals as an illustration of “How biodiversity works”. The poster can be used to teach key ecological concepts such as cycles, food webs, population pyramids, life cycles, classification and so on.

### Activities

#### 1. What can you see in the Caspian Ecosystem?

The goal of this activity is to know about the *variety of species* of plants and animals that make up an ecosystem

Ask children to work in groups and list all the living things they can see in the picture. Then ask them to *classify* them. Depending on their age you can suggest different ways they might like to do this. Very simply they might divide their list into Plants and Animals. There are other more complex ways of doing this as well using ecological concepts – such producers – herbivores (those that eat plants) – carnivores (those that eat other animals) and so on.

## 2. Where do animals live?

The goal of this activity is for children to know that animals live in different places called their *habitat* – and that often they are well *adapted* to this habitat,

Ask the children to look at the different places where animals live *habitat* – and how they might be *adapted* to these places. You can choose a list of animals from the poster and then ask the children to look at poster and describe where they live. You can then ask the children to say how the animal and habitat are linked – and think “why do certain animals live where they do?” You can ask the children to fill in a table like the one below

Name of Animal	Where it lives	Why do you think it lives there?
<i>Snake</i>	<i>On the ground near long grass</i>	<i>For protection and maybe a source of food</i>

## 3. Who eats what?

The goal of this activity is to introduce the idea of a *food chain* – and the fact that the food chain is important for the *flow of energy* through an ecosystem and the *ecological links*. Children will also realise that everything is in *balance*.

(a) Class Activity - Ask the children to find animals on the poster that are eating plants and animals. Then give children a copy of the black and white version of the poster and get them to work in groups to draw arrows to show what eats what. After around ten minutes gather the children around the poster and summarise and correct their ideas (food chains)

You can tell the children that every living system needs *energy* to survive (you can ask them where we get our energy - from food of course! ) You can ask – where is the source of energy for an ecosystem like this one. (from the sun). You can then follow the energy through the food chain (sun – to plants – plants to animals – animals to other animals – and when animals die – the energy goes back to the earth)

(b) Food web game – This is an active demonstration of the food web. To do the activity you will need a ball of wool and you will have to make badges or labels for the main species on the poster – two birds, two fish, two plants, two insects and two mammals. This could be a class art activity with each child making their own badge for homework. For the activity you should ask the children to stand in a circle – with one of the children being the sun! The “sun” holds one end of the ball of wool. You then ask the children “who uses energy from the sun directly” – the answer is the plants. You then join the plants to the sun with the ball of wool. The next question is “who eats the plants” and again you use the wool to join the plants with the fish and some of the mammals and so on and so until everyone is joined to something that it eats and something that eats them!! When you have done this you can then ask the children questions – such as “what happens if?” - to demonstrate the links in the ecosystem and how everything is finely balanced. For example, what happens if too many fish are caught so they die out. Well – other animals will have less food so they might die out as well! If you want to be dramatic can “cut” these links with scissors and you can get children to act out in a small drama with the animals that are dying falling on the floor. You can also ask children – what might cause links in the ecosystem to break?

(c) This is another activity about food chains with the aim of strengthening the notion “food chain”, “food pyramid”, “predator – prey”, “producer – consumer”.

You should prepare in advance colourful images/names of links of 2-3 food chains of the same length according to the number of children in the class. Of course these should be related to the poster if possible.

During the class, put the cards with fragments of the food chain on participants' backs. When a student has got a card, she/he has to identify what animal, plant or part of the plant he/she is with the help of simple questions. S/he can ask all participants of the game. Possible answers are "yes" and "no" only.

When a participant is completely sure in who he/she is, the task is to find other elements of his food chain (children with the cards of the corresponding colour). The group, which builds the pyramid first and correctly, shows the link producer - consumer or predator – prey, wins.

In the conclusion ask the children to answer the question – “ what would have happened if one chain of the food chain disappeared or became very numerous”.

#### **4. Animal Life Cycles**

The goal of this activity is to help children understand the concept of the *life cycle* of an animal.

You can ask the children to work in groups and give them a copy of Resource S2. This shows one animal life cycle but with the stages jumbled up! You can ask the children to put the stages in the right order and find the animal on the poster. There is one example of the life cycle on the poster as well. The second activity involves linking the other pictures on Resource S2 with the animals on the poster. This is partly guess work but the children can begin to

#### **5. The wonder of Ecosystems**

The goal of these activities is to encourage children to have a *sense of wonder* about ecosystem and the natural environment

(a) You could ask children – is there anything we can learn from ecosystems? You could for example ask the children some tough questions – like “where does the waste in this ecosystem go?” Humans are the only animals on earth that enjoy wasting energy. You could ask children - is there way we humans can mimic ecosystems? For example – using the idea that all waste is food.

(b) You could ask children – does this picture look attractive – and what do you feel when you see a picture like this? What is missing from this picture? Of course some children might notice that there are no people in the ecosystem. You could ask them – what do you think that effect of people might be?

#### **6. What is the Caspian Sea like near where YOU live?**

The goal of this activity is to help children *observe* and *record* the natural environmental and ecosystems around them.

Of course – looking a picture of the Caspian Ecosystem is interesting, but not as exciting as actually observing an ecosystem at first hand. You are encouraged to take the children outside into the environment and using a copy of S3 take them on a guided walk through an area close to the Caspian Sea where you schools is. They can play a kind of “bingo” game walking by the Caspian and trying to spot as many things as they can see that are on the poster. Of course, the fish and some of the other animals will be difficult. At one point you could stop and ask the children to draw their own sketch of the Caspian.

#### **Resources for children**

Resource S1 - A black and white outline copy of the poster – one that can be photocopied for children to be able to label.

Resource S2 – a black and white set of pictures to illustrate the life cycle of one species and then different animals at different stages of their life cycles.

Resource S3- a black and white copy of the poster with the names of all the animals written on it. This will help you

## **10 ACTIVITIES POSTER THREE**

### **What is the State of Biodiversity in the Caspian?**

#### **Introduction.**

#### **Description of the Poster**

This poster shows different kinds of data all of which carry the same message – that the biodiversity of the Caspian is declining – the number of animals is getting less and the number of species is getting less. Although the causes and the solutions are complex and can be discussed at length, the simple fact that biodiversity is declining cannot be questioned

The Caspian Sea – is the world known water area, which is the home to the biggest population of sturgeon types of fish in the world (about 80% of the world amount). The Caspian is also the habitat of such rare species as the Caspian seal, flamingo, pelican and lots of others. Annually millions and millions of migrating birds stay over in their flight from Africa and Asia to the north of Russia. That's why there are 5 protected natural territories of the world level on the Caspian coast. These territories are under protection of the International Ramsar Convention on Wetlands.

The Caspian also offers excellent recreation opportunities – sand beaches, beautiful landscape, pleasant climate conditions, and a rich historic heritage.

#### **Activities**

##### **1. The “Council of All Living Beings”**

This activity is appropriate for 11-14 years, and the goal to introduce the students to the diversity of the Caspian region species; study its current state; identify the existing threats to biodiversity. The activity will last up to 90 minutes. You will need a large space for the activity such as an area in a space in the park or beach by the Caspian Sea ! Somewhere where it is possible to sit all participants in a big circle or a spacious class room without desks. The “lesson” has a number of phases.

##### ***Stage 1. Preparation for the “Council”.***

Help the students to make the list of Caspian flora and fauna species. After that suggest the children to divide the animals between themselves in such a way, so that the interests and preferences of everybody are maximally considered. This approach will help the child to accept the role of plant/animal better and will increase the motivation while preparing for the lesson. If you don't have enough or want to save time and avoid lengthy discussions you can divide species at random yourself. If the class is quite big, then you can ask the children to form “families” (she and he animal, baby animal/a group of plants of the same type, which grow together, etc).

When the roles have been divided, the students get the following task:

- Create the “costume-image” of their specimen, which will help the members of the Council to understand their destiny better. Some students will prepare a costume for their animal, some might decide to use the photo whilst others can hold something from a human world associated with their animal
- Collect information about a specimen (habitat, food, population, existing threats, etc);
- Prepare a short presentation-speech (1-2 minutes) on behalf of their plant/animal;

## **Stage 2. “Council of All Living Beings”**

You the teacher should act as the presenter.

*Reads out a poem V. Fedorov “Russian Fairy Tale” – here is the main idea*

People can turn into animals, and when they’ve done that, they would be able to tell us about how upset they are by our (human) attitude to the animals and plants.

**Presenter:** *you’ve turned into an animal. Your consciousness has moved into the world of plants and animals. Breathe in easily; start to feel what it is to be in the other form of life.... What shape have you got? How much space do you take now? What kind of skin have you got, what is your body like? How do you react to what is happening around you? How do you move or how something else moves you? Do you make noise? Try to make it. .*

After that, the presenter welcomes everybody at the Council, devoted to what’s happening with the Earth and their own lives at the moment. Presenter asks everybody to introduce themselves. Each plant/animal has to present him according to a special format: “I am a seal and speak on behalf of the seal population”, “I am a wild goose and speak on behalf of all migrating birds”. It is very important that this short presentation happens before lengthy presentations.

When that is done, species volunteer to tell their story. The first part of the story is the information about a specimen (how it looks like, habitat, food). The second part are the problems the animal faces.

For example, *“I am a Wild Goose and would like to tell the Council, that my long flights are now happening with huge problems, as the bogs disappear. The shell of my eggs becomes very thin and fragile; it breaks before my kids are ready to break through. I suspect that my bones contain some kind of poison”.*

After each presentation the animals/plants, present at the Council say *“We hear you, the Wild Goose”.*

Each Council, depending on its dynamics, ends up in a different way. Some end up in a thoughtful silence. The end of others is accompanied by shouting, sound of grass and other sounds of nature.

No matter how the Council ends, it is necessary to conduct its formal closing and express gratitude. Participants should talk to the forms of life, which they presented and thank them for the honour to talk on their behalf; after that they can step out of their image.

## **2. Data Analysis**

(a) Ask your pupils to look at the graphs that are on the poster and to imagine that they have to write a short newspaper article to go with each graph to describe what message the graph is saying about biodiversity in the Caspian

(b) Ask your pupils to look at the photographs and for each image ask them to write a sort caption to describe the message the picture is giving. You can also ask them to ask them how they feel when they look at each photograph. They should write a short sentence like this – “I feel \_\_\_\_\_ when I look at this photograph because \_\_\_\_\_”

(c) Ask your pupils to read the newspaper article and discuss whether the author is on the side of protecting biodiversity or saying that biodiversity protection is not all that important. The article has not been finished – how would your pupils complete the article?

(d) Get your students to do a role play – with one student studying the data on the poster and then acting the role of scientist – and another student acting the role of reporter.

### **3. Are we in danger ?**

The painting at the bottom on the poster has been designed to give a message – ask the pupils to describe what they think that message could be.

### **4. A Time Expedition - What is the state of the Caspian Sea near where you live?**

This activity has several stages that involves a visit to the Caspian Sea and some imagination!

- (a) Tell the students they are going to be part of the expedition - but not a simple one - an expedition in time. You can show a picture of famous explorer and say that all explorers kept diaries of their journey! The first part of the expedition is to walk along part of the Caspian sea Coast – or near by to the Coast – say a wetland area. Tell the children that for the first part of the “Expedition Diary” they’d have to present:
- “Creative page” – drawings and pictures of the sea and coastal zones, plants, animals, industrial objects and houses made by them;
  - “News Page” – selection of news about the Caspian Sea over the last month (from newspapers, radio, TV, Internet).
  - “Impression’s page” – what the students have seen learnt, what has upset them and vice versa.
- (b) In the second part of the expedition children will have to imagine themselves in the past. Try to think what this area looked like ten years ago or fifty years ago or even one hundred years ago!!
- (c) Suggest to children that they talk to old residents who spent most of their time at the Caspian – maybe a retired biology teacher! - You might even get the older person to accompany you on a guided walk of the area visit archives of the library, local studies museum or museum of history. Surely, children we’ll manage to find a lot of information as to what the Caspian used to be a few decades ago. Some might be lucky to see the pictures made in the 50-80s.

### **5. General losses of biodiversity around the world**

The goal of this activity is to look at the process of ecosystems’ destruction worldwide and identify the reasons of that. As the poster says, the process of ecosystems’ destruction becomes quicker every year. What is the situation like in other parts of the world? Ask the children to look at the map and allocate the following countries according to the degree of ecosystems destruction

Australia  
Iran  
Kazakhstan  
Russia



Turkmenistan  
Western Europe countries  
USA

And then get to answer the questions -

1. What, in your view, has caused these destructions/changes in each country? It would have been good to give charts of industries development in these countries.
2. How can you characterize the situation in the countries, where ecosystems haven't experienced serious changes?
3. Why do you think that despite the poor state of the ecosystems, the quality of life stays quite high? (see "Resource 2").

Quality of life – this is the quality of satisfying material and cultural needs of people – quality of food, clothes, comfort of housing, education, health care, infrastructure, environment, etc.

The following indicators can be used to measure the quality of life: average life expectancy, real income per capita, level of education. For each country we can calculate the average meaning of all quality of life indicators to get one figure, which summarizes all indicators. This figure is called the human development index (HDI). Every year such index is calculated for each country of the UN to compare life around the world. The highest result is 1.0 and the lowest 0!

### **Quality of life in the countries.**

Australia	0.957
Iran	0.746
Kazakhstan	0.774
Russia	0.797
Turkmenistan	0.724
Western Europe countries	0.9 +
USA	0.948
Africa	0.3-0.4

## **6. Why do global ecosystems matter ?**

When you work with the children on activity five, you can make a simple drama or experiment.

Tell the children that those who seat in the first row represent the countries with good state of ecosystems. Children in rows two and three represent countries with satisfactory state of ecosystems and children in rows four and five – countries with much destroyed ecosystems. Give children of the first row air fresheners (it is best to select flower smells) – this is oxygen, which is produced by the ecosystems of their countries. Ask the children to disperse the air fresheners a few times. Has the oxygen stayed just in rows 1 and 2 – ask which children can “smell” the oxygen? Even the countries with destroyed ecosystems have got some. You can lead the children to the conclusion that the biosphere is one for all. People, who live in the countries with destroyed ecosystems, use the atmosphere created by healthy ecosystems, which exist in other countries. However, every year it becomes more and more difficult for the life provision system to stay sustainable within the biosphere limits.

Ask the children to come back to the poster.

Is everything really ok with us/our country? How likely is it that we'll have to live at the account of other countries? Ask the children to fill in the cluster "Destruction of the Caspian ecosystems continues because..."

### **7. The increase of species – is it always a good thing?**

Look at the picture of the jellyfish – this is not a native of the Caspian Sea – it was brought it but ships from other places but has not established itself and is having a big impact on other wildlife.

For an activity – write these words on big cards or on the blackboard and ask your students to put them in order.

- Other fish don't have enough to eat
- Jelly fish come into the Caspian
- Population of fish get so small and eventually can die out
- Fish are don't have enough to eat and have problems reproducing
- Eat food that fish and other animals eat
- Fish die so lower numbers – especially of young fish

### **8. Migration in the life of birds.**

The goal of this activity – aimed at children aged 11-14, is to introduce the pupils to the migration in the life of animals; identify factors, which hinder natural migration and consider possible consequences. It can be used in the subjects of biology. As we said at the beginning of the chapter, the Caspian Sea is also unique because it is a rest place for many migrating birds, which fly from Africa and Asia to the north of Russia. That's why the issues of migration and events, which hinder it, are very important in studying the Caspian ecosystems.

It is likely that the word "migration" is not new for children – nearly every day it is on television. Ask the children to find similarities/parallels in the migration in human society and the animal world – what factors cause it. Summarise the answers into single definition.

The migration of animals is the regular periodical movement like passage of birds from colder to warmer climates, or the unexpected movement – due to the lack of food, flooding and other natural or anthropogenic factors. Some animals migrate during the day only – and others both at day and night.

Select bird to find out more about migration of birds. It will be very good if you can observe and listen to these sky travelers with your pupils. Bring a book about geese to the class. Ask the children to find information about migrating routes of geese. At what time does this bird come to your region?

Spend a few minutes on the role of the flock in a bird's life. If you have enough time, make a list of reasons for birds to make flocks (defense against predators, help in search for food; V-shape of the goose flock is an example of cooperation between birds to reduce windage when flying).

## **11 ACTIVITIES POSTER FOUR**

### **What's causing biodiversity problems?**

#### **Background and Introduction**

The major cause of biodiversity loss is through human activity causing habitat degradation and depletion. In some cases natural factors are also important and although we can not change them much, we have to understand them in order to forecast the future.

This poster is designed for children to understand how human activity causes biodiversity loss in the Caspian region. The idea of the poster is to help children understand how different factors, cause biodiversity problems in such a way that children are able not only to name them, but demonstrate their inter-linkages and cause-and-effect relations with the elements of the Caspian ecosystem. We also hope that the poster itself through its images, colours will provoke emotional reaction and through emotion strengthen the knowledge.

On the poster there are different groups of pictures which illustrate the action of natural and human factors, which influence Caspian biodiversity. The images have been selected in such a way that when studying the reasons of Caspian biodiversity problems it is possible to analyse the action of natural factors, as well as social – caused by human desire for more consumption.

## **1. Natural Causes**

### **(a) Changes in the Caspian Sea level.**

The level of the Caspian Sea appears to be constantly changing due to natural factors. In 1977, the lowest sea level for the 20<sup>th</sup> century was registered - 29.03 meters below mean sea level. However in the following years a rapid increase started and in 1987 the water reached the mark of 27,62 meters below sea level. . In 1995 at 26,61 meters the stabilization process started and the following years saw a drop of only a few centimetres. At the moment, the Caspian sea level is going down very slowly and is approaching the mark of 27,20 meters below mean sea level. It should be noted, that the change in the Caspian Sea level has the biggest impact on the delta and shallow marine biotopes because it significantly transforms the living conditions of the aquatic organisms. No one really knows the causes of these changes. They could be linked with the climate change or with the volume of water which comes into the Caspian from rivers or other factors.

## **2. Human (anthropogenic) factors that influence Caspian biodiversity.**

These are not listed in any order of importance

### **(a) Regulation of the rivers that flow into the Caspian Sea**

This includes the construction of dams and establishment of water reservoirs. These have created a series of environmental problems including a reduction of rivers' inflow and change of its regime such as a release of water at dams, reduction of the spawning migration routes for fish and accumulation of biogenic nutritious substances in big quantities at water reservoirs.

### **(b) Influence of the alien species.**

An alien species is one that should not really be in the Caspian at all but has been brought there. A huge increase in alien species happened in the 20<sup>th</sup> century, especially from the Black and Mediterranean seas. These intrusions are linked with the human activity and took place when the Caspian sea basin was connected with other seas by canals. It is important to mention two types of plankton crayfish (*Calanipeda aquaedulcis*, *Acartia clausi*) and Dog's Tail (*Mnemiopsis leidyi*), which came into the Caspian with the ballast waters of ship at the end of the 20<sup>th</sup> century. The first of the two species can be considered to be a example of positive intrusion, as they are actively eaten by

plankton eating fish and increase the value of Caspian zooplankton. Dog's Tail it is a good example of negative impact on biodiversity of the Caspian. Dog's tail eats plankton very actively and destroys the feeding base of the plankton eating fish.

**(c) Chemical pollution (household and industrial)**

Liquid and solid waste substances are discharged into rivers and lakes creating pollution of coastal zones. This pollution comes household and industrial waste dumps and is often illegal. Household waste from toilets and waste water pollutes the Caspian and many industries simply use the rivers and sea as a waste dump! Farmers also pollute the water through using pesticides that are then washed off the fields and into the Caspian Sea. Some of these are legally used but farmers use too much and the excess goes into the Caspian. Some chemicals, such as DDT are used illegally.

**(d) Irrational administrative activity.**

There are a large number of examples of poor land use around the Caspian Sea resulting in different kinds of problems. Deforestation for farming and building causes more soil to be washed into the Caspian; draining of land for farmland means a loss of wetland habitat and the same happens when land is taken for tourist development

**(e) Over-fishing and poaching**

There are several valuable varieties of fish in the Caspian, none more so than the Sturgeon. In the 90s of the 20<sup>th</sup> centuries, the catch of sturgeon was ten times higher than it is today, and although national and international legislation has been passed poaching is still a big activities

**(f) Oil extraction and transportation, seismology exploration.**

Intensification of the marine oil extraction, including beginning of the oil extraction at the reserve area of the Northern Caspian and an increase of tanker transportation seriously increases the risks of negative impact on many Caspian species and habitats. Oil is the key of many economic and political disputes. The oil stored under the Caspian and in the adjacent areas make from 40 to 57 billion barrels. Potential reserves are assessed as 68 – 250 billion barrels. An increase of oil exploration will inevitably lead to increase of the pollution of the Caspian sea and coastal zones. This will cause serious damage to biodiversity and state of the ecosystems. The Caspian is a major source of oil reserves for the future especially as other major sources of oil decline.

These are all regional factors caused by people. There may be very specific local ones in your area. There are two other important points to note.

The first is that we cannot blame anyone for the problems without blaming ourselves. Most of the problems are caused because one kind of business or other makes something that WE as consumers want – and want as cheaply as possible. We want petrol for our cars – it has to come from somewhere. If we buy petrol, we are one part of the chain of pollution. We want to dispose of our waste water and we don't want to pay a lot for it. So where does it go – the Caspian. And so on!!

Secondly there is one huge problem which is global in scale but that will affect the Caspian – and that is climate change. Over the last decades emissions of the “greenhouse gases” as the result of human activity have increased and although the impact of the climate change on the Caspian biodiversity is not studied well the majority of researchers agree that climate change will have a huge impact on the Caspian as temperatures increase.

## Activities

### 1. What impact do I produce on Biodiversity?

These activities are aimed at pupils aged 13 and 14 studying biology/ecology and economics

Start the lesson with the question to the students: “Do you have any impact on the state of biodiversity?” After a short discussion, draw the attention of children to the fact that although, they don’t hunt for rare species, don’t chop down forests and dry out wetlands, their life style is nevertheless linked with things, which cause these changes. In order to be sure in that, ask the children to do the following activity:

#### *Resource for participants*

Make a list of things, which and your family and you usually do during the week. After that, please think about direct and indirect impact of your life style on biodiversity in your country and other parts of the world. Continue filling in the table according to the example given. Probably you’ll have to consult additional literature.

<b>What do I and my parents do?</b>	<b>Direct or indirect impact on biodiversity</b>
Buy clothes, shoes	Imported trainers are made out of kangaroo leather...
Buy food products	Chemicals, which are very bad for all living organisms, have been used to grow them
Wash clothes	
Every week we throw away ___ Kg of waste	
My parents work at ...	

### 2. What influences Caspian biodiversity?

The goal of this activity is to introduce the children to the problems of the Caspian biodiversity.

Invite the children to come to the poster. Remind them, that on poster 2 they saw rich diversity of animals and plants. Ask the children to say what they see on this poster. What do these pictures tell us about? Working in groups ask them to look at the photographs and make a sub heading for each one on a piece of card. They then have to show one of their cards to another group which then has to work out which photograph it is. When you have heard descriptions of all the photographs then ask the groups to put them in order of importance (perhaps using a diamond ranking method)

You can focus on one of the causes illustrated by the photographs depending on which is most important in your region. For example, when thinking about oil you can ask –

- How can consumption of oil products influence the loss of Caspian biodiversity?
- Does anybody know how oil extraction happens on the Caspian?
- What properties does spilt oil have?
- What damage does oil pollution cause to animals? Show the photo of the bird polluted by oil or give example of fish death as the result of water being polluted by water.
- What is my role in all this – if I consume oil based products is pollution really MY fault?

### **3. What happens with the level of the Caspian sea and what global processes are reasons to that?**

The goal of this activity is to introduce the children to the action of global factors and their impact on Caspian biodiversity.

Ask the children to look at the photo of houses flooded by water ask them what the picture shows – what happened to cause this? How would they feel if they had lived in this house? Tell them how the level of the Caspian sea has changed over the last twenty years. Tell them, that at scientific conferences and meetings meteorologists, hydrologists, hydro-biologists and ecologists all discussed the problem of sea level rise and the problem of settlement flooding and tried to find the way to solve those issues. However, less than ten years passed and the level of Caspian Sea reduced naturally and the problem of settlement flooding was solved.

Ask these questions:

- What happens with terrestrial ecosystems of coastal zones and their inhabitants if the sea level increases?
- What happens with water ecosystems and their inhabitants if the level goes down?
- Who finds it easier to adjust – animals – people or plants?

### **4. The role of natural ecosystems which surround the Caspian sea in biodiversity conservation**

The goal of this activity, aimed at 12-14 year old pupils, is to demonstrate to students that conservation of natural ecosystems means conservation of natural biodiversity of the Caspian.

First of all, tell the children that communities in the ecosystems make the single and interlinked whole. In the ecosystems there are no harmful or useful animals, birds, insects. No waste even! Even predators and their victims are adjusted to each other. Climate changes, which happen for various reasons, influence the sustainability of these relations. Loss of small, not numerous or harmful species – from a human point of view – are unnoticeable until a certain time. However, with time it leads to pauperisation of species composition and degradation of the ecosystem.

Talk to the children:

Biocenose (bios – life, koinos – general) is an organized group of interlinked populations of plants, animals, mushrooms and microorganisms, which live together under the same conditions of the environment.

Ask the children:

1. What kinds of organisms take part in the process of habitat formation of the terrestrial ecosystems?

2. What kinds of organisms increase bio productivity of water ecosystems?
3. In what way improvement of the state of terrestrial and water ecosystems are linked with the state of the Caspian ecosystem?
4. In what way, river ecosystems help with conservation of Caspian biodiversity?
5. Ask the children to find different types of ecosystems on the pictures; ask the question – how in their view, these ecosystems will develop if the climate conditions change – will get warmer or colder?

Give drops of Caspian water (cut out of blue paper) for each correct answer. The size of the drop can be bigger or smaller depending on the answer. Tell the children, that from now on they are the Caspian Keeper, as their understanding of how the organism of the Caspian Sea works will help them to protect it as the unique nature ecosystem.

## **5. We are far away from the Caspian, but we have an impact on it.**

The goal of this activity is to look at the links between the land river ecosystems around the Caspian Sea and the Caspian Sea itself. Ask the children to come up to the poster and find the evidence of the links between the land and sea ecosystem. Tell them, that destruction of natural ecosystems around the Caspian by people is one of the reasons of marine biodiversity loss.

In order to answer this question recollect with the children what animals are inhabitants of the river ecosystems, but at certain stage of their life visit the Caspian? What animals belong to the marine ecosystem, but at certain stage of their life move into the river ecosystem? What is this linked with? What will happens with the number of sturgeon population in the spawning period, if they have to move up the river for spawning? What do they meet on their way? (dams, water dividers, poachers, etc). After that, you can develop this topic.

After this lesson, give the children the task to prepare and make presentations on the following topics:

- Fish, which use fresh river ecosystem as well as salty Caspian ecosystem in their lives;
- Birds, which migrate from water and bog ecosystems into coastal marine ecosystems;
- Birds, which migrate from various continental ecosystems to the south of the Caspian, etc

After presentations of the children, ask them to find the photo (on the poster) of a person destroying natural ecosystems.

You can also ask the pupils how they have an impact on the Caspian. You can for example, ask them where the waste water from their houses go and what happens to water flushed from the toilet?

## **6. Global Impacts**

These activities are related to the previous one.

(a) Ask the children to look at the maps, and together with the image related to oil, explain what damage oil is having on the biodiversity of the Caspian. You can also ask them whether this damage is likely to get better or worse in the future – the answer to be honest is probably worse. Oil is getting scarcer, but we need it – therefore the countries that have oil will want to sell as much of it as they can to get richer. You can see from the maps of pipeline where oil is going – anyone who drives a car and uses petrol is partly to blame for the problems of the Caspian. Ask the pupils to draw a poster that illustrates the links between ordinary people and Caspian biodiversity loss.

(b) Look at the take make waste diagram. Ask the pupils to try and describe the message of this diagram. It relates to how we produce goods – and at each stage we destroy biodiversity – when we take raw materials from the earth, when we make things (when we usually pollute) and then finally we throw things back into the earth – often where they can biodegrade for centuries.

(c) Look at the graph of temperature and CO2 emissions. This is a graph to show that our climate is changing and WE are doing the changing because of our pollution of the atmosphere. You can say to the class that because of climate change the earth is getting hotter and hotter – ask them to imagine how this will affect the Caspian Sea in the future. Do t give nay hints – but there might be more desert areas for example.

## **7. Environmental TV show.**

The goal of this activity is to show the children different views on the problem of Caspian biodiversity.

Several days prior to the TV show, prepare names of the factors which cause Caspian biodiversity loss and give them out to children. The pupils are to act as ecologists. Select one pupil who will lead the show. Some children will act as opponents to ecologists and will represent the interests of hunters, fishermen, tourist business, landowners, sheep owners and so on. The rest are the audience - they can take part in the show. The task for the leader is to really know the impact of factors which cause biodiversity problems. The leader should not only lead the show, but ask difficult questions to the participants and the audience; demonstrate his video, audio and photo headlines, such as a picture of birds covered in oil, extracts of nature voices (birds, water, frogs). The leader comments on the extract and asks simple questions to different groups. For example - to the representatives of the oil business, “ Would you like our nature to look like this (photo of birds covered in oil) or like this (sounds of nature)?” Such headlines will liven up the show. Of course the oil person could respond by showing a picture of a horse and cart and ask – “would you like us to travel like this, or like this” – showing a picture of a car!

At the end, the leader or the teacher should say that there is such a problem and reasons of biodiversity loss have been identified; if people don't find solutions, then the value of natural ecosystems will be lost and business of nature uses will go bankrupt. That's why we have to think about Caspian conservation together.

## **12 ACTIVITIES POSTER FIVE**

### **Description of the Poster**

This poster shows a range of different ways in we can help to protect the biodiversity of the Caspian Sea. These have been grouped. Things that we can do as individuals and at school, and things that we can do at a community level. Obviously action can also take place at a national and international level but it is difficult for The idea is to encourage young people to take a range of actions and encourage them to both look at their own lifestyles and to get involved in nature conservation.

One important thing to stress is the balance between personal action and the action that needs to be taken at a bigger level. For example, waste water from houses might go into the Caspian and pollute it. But you cannot ask children not to wash or go to the toilet!! The children will have to write to the local politicians to say that a new waste water treatment plant needs to be built.

There are some suggestions for activities on these lists below but the main recommendation sis that you ask the pupils to look at the posters and that they then work out things that they can do for themselves.

### **Activities**



## 1. Some activities based on the Poster Images

- (a) Look at the photograph of the man being arrested for poaching and in groups discuss the following questions and be prepared to debate them with you class mates and teacher -
- This man has been caught for poaching fish – what do you think he is thinking – and what is the ranger thinking? Imagine what they are saying to each other.
  - Why do you think the man was poaching – what made him do this?
  - Do you think that catching this man will make much difference to the biodiversity of the Caspian?
  - What would you do to help people like this poacher so that they did not have to poach?
  - Discuss this statement “why is it that only small poor fishermen get caught – why doesn’t the government chase the really big poacher who make a lot of money” .
- (b) One way of protecting biodiversity is through banning the sale of protected products. Look at the picture of the Caviar - Until recently – there was a ban on the sale of caviar made by the United Nations. Recently though this has been lifted even though the sturgeon is still at risk! Draw a poster in your groups to explain to people why caviar sales should be banned until the sturgeon reach an acceptable number again. Make a commitment as a class that you will make sure that the parents of the children in the class don’t buy protected species to eat.
- (c) What is your vision of the future. Look at the picture on the poster that has a grey side and a bright side. In your note books make a table with two columns and write some characteristics of both images. Which one of these do you think is most likely to be the future and which would you like to be the future? What has to change in the world to get the future you want? Other activities related to the future would be to ask the pupils to draw their own vision of the future for the Caspian, and another would be to brainstorm a list of what the pupils would like to see in the future.
- (d) Making protected areas is another way of helping to protect biodiversity. Look at the map of the Caspian that show protected areas. In theory no development can take place in these areas. You can explain to the class what a protected area is and then ask the class some basic questions such as – which countries have protected areas along the Caspian and which do not – why do you think that is (is it anything to do with oil for example, estimate what proportion of the coastline of the Caspian is within a protected area? If you were Minister of Environment what other areas would you protect in your country? Can you class e very clever as think what is the big disadvantage of the protected areas on the map (the answer could be that they are all on land. Why is there no area of water that is protected?
- (e) NGO action is an important way of raising awareness and protecting the Caspian. Look at the pictures of the NGOs action and ask the class what is happening. Ask the class to think about nay NGOs they might know of in their region – are they a member? You could also ask the class if they can spot the NGO logo from their country?
- (f) Two quite difficult diagrams have been put on the poster. You will have to explain these to your class. They show how we need to organise our economy if we are going to save the Caspian – and illustrate how we shall have to think differently. The diagram of the circles shows that our economy needs to work within the limits imposed by our ecology. So for example, our natural world has almost taken all the pollution it can take. If we pollute it any more we are in danger of destroying our planet. So the diagram means that form now one – there must be no more pollution. You can ask your class for more examples. The second diagram is more complicated and has the message that all the products we make or things we use from or natural environment need to be cyclical. So for example, if we use biological resources they need to have no impact on the environment and be recycled – COMPLETELY.
- (g) A good example of both diagrams is renewable energy - The picture of wind turbines has been put on the poster to show that renewable energy is going to be one thing that might save the Caspian as it

is safe for the environmental and will men that we no longer depend on oil as a source of energy in the future.

The BP web site is interesting. It is an example of a big business making an effort to be more environmental and invest in other sources of energy. You can gie your class a task of asking them to design a new version of an old product – but design it isn a way that makes it an environmental product.

- (h) Rethink, Refuse Reduce. This is postcard to encourage – what do you think? Ask the pupils in the class what they think that the message of this post card is
- (i) International Agreements. You can see that there are lots of logos on the posters. The Caspian Environment Programme (CEP) is an important organisation that has helped to develop the Caspian Convention. This is an organisation made up of representatives of all Caspian states dedicated to protecting the Caspian Sea.

## 2. Practical activities that can be done at Individual and Community level

- Do research on a specific topic – write essays – make presentations. The research could be presented to different target groups. For example your class could invite members of the local administration to take part in a debate or could make presentations to families and friends.
- Children team up with nature conservation wardens on one-day activities
- You could organise a drawing or painting exhibition about the Caspian and show the works of art in public places
- Your class could produce wall-newspaper or a sixth poster!! To put in public place in your school
- Your class could prepare a Biodiversity newsletter (collect news – monitoring Report)
- Hold round-table meetings with local authorities about a particular theme.
- Plan and Run small biodiversity awareness campaign – making sure that it is realistic and achievable
- Establish Environmental Patrol Teams with classes taking turns to monitor something
- Targeted Eco-tours – your class could prepare a brochure and maybe a trail for your local area about the biodiversity of the region.
- Your class could attend national environmental events such as a National Biodiversity day – prepare and perform acts and demonstration
- You could take part in and organise practical clean up activities or activities such as tree planting and care
- Your class could develop a Eco Code for the class or for the school or community.
- You class could do a local environmental survey and identify sources of possible pollution in the Caspian
- Visit the local natural history museum if you have one or establish a NHM for your school!
- Decide on personal action that pupils could take – not buying protected fish species from the market – not dropping litter and things like that.j

## 3. How can we help to save Biodiversity

The activity involves a role play “Pre-Caspian Countries Leaders Congress” and is designed fpr 11 – 14 years old. Read out the following information article to the children:

### 07.08.06, Article from - Kazakhstan Today

BAKU, August, 7<sup>th</sup>, Kazakhstan Today. Counting wards of Azerbaijan and Russia and the Counting Committee controlling the republican budget of Kazakhstan had identified the time to sign the triple agreement on joint parallel event to control the effectiveness of Caspian biodiversity protection measures and usage of fund to renew the resources of sturgeon species. Correspondent of the agency was informed about that by the Counting Ward of Azerbaijan.

The document will be signed within the meeting of the leaders of the higher financial control bodies of the NIS countries, which will take place in Minsk, September 5-6<sup>th</sup>.

**Extinction of a specimen – is an event, which is not very dramatic on its own, but the main thing is that it is as unalterable and irreversible as the death of the work of art. Having disappeared once, not a single specimen can appear again on this planet. And if, on the verge of the third millennium, a person destroys living organisms without thinking, can he be called a *homo sapiens*?**

Divide the pupils into different groups and allocate a role to each group. The item for discussion is whether to completely ban the fishing for sturgeon and caviar for a period of ten years to allow fish stocks to recover and for time to be given to a management agreement to be implemented

- Local Fishermen – would argue that it is not fair and they would lose their income – what would happen to them?
- Local Consumers – some would argue for the ban (because they want to see fish conserved) and other against (because they like eating the fish and can see that the local economy would suffer).
- Conservationists – would argue for the ban to protect species for the future.
- Local Politicians would be worried because of the impact on the local economy

You could think of other roles as well

## **BIBLIOGRAPHY**

### **Where can I find additional information?**

In this section you'll find information about printed materials and sites in the Internet, which to a different extent can help you in lesson preparation.

#### ***Internet- sites***

- ✓ <http://www.list.sib.net/catalog/10046.html> - links to various information and educational resources of the Internet;
- ✓ <http://www.eco-net.ru> – site of the State Environment Protection Service of Russia;
- ✓ <http://www.allbest.ru/union> - catalogue of educational sites;
- ✓ <http://www.nsu.ru/materials/ssl/> - scientific laboratory of school pupils;
- ✓ <http://teen.fio.ru/news.php> - site for parents, teachers, school children;
- ✓ <http://som.fio.ru/item.asp> - Moscow centre of Internet-education to help the teacher;
- ✓ <http://www.catalog.alledu.ru/edu/> - all educational resources of the Russian Internet;
- ✓ <http://ecolife.org.ua/> - public ecological project “EcoLife”;
- ✓ <http://www.allbest.ru/ekol.htm> - e-library on ecology;
- ✓ <http://www.ecopravo.info/> - magazine “Ecology and Law” ;
- ✓ [http://collection.pp.ru/s51\\_10.htm](http://collection.pp.ru/s51_10.htm) - nature protection, ecology, nature use.
- ✓ <http://www.oceaninfo.ru> - site devoted to the problem of the world ocean;
- ✓ <http://www.ecoportal.ru/public.php?begin=1> – All-Russian ecological portal;
- ✓ <http://ecobooks.nm.ru/> - a series of books on ecology and nature use;
- ✓ <http://www.aseko.org> - site of Association of Ecological Education (AsEkO, Moscow, Russia);
- ✓ <http://ecoeducation.host.net.kg> – site “Ecological education in Kyrgyzstan and Central Asia”
- ✓ <http://www.ecoobraz.com> – site “Ecological education and education for sustainable development”;
- ✓ <http://www.field-studies-council.org> – site of the Field Studies Council

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