

CASPIAN SEAL CONSERVATION WORKSHOP

Renaissance Hotel, Atyrau, September 17th-18th, 2009

Draft minutes and report of the meeting

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Aims and objectives of the Caspian seal workshop

The principal aim of the workshop was

- to present their current state of scientific knowledge about the conservation biology and status of the Caspian seal to stakeholders throughout the Caspian region, including government authorities, scientists and NGOs
- to invite comment, questions and discussion from invitees to the workshop
- to reach a consensus on current problems and ways to address these effectively
- to conclude with a resolution from the workshop attendees concerning the present status of the Caspian seal, past, ongoing and potential threats to the species, and conservation action to be implemented.

Areas covered in the workshop presentations by invited speakers

1. **Overview.** The workshop opened with a presentation by **Professor Zaitsev of Astrakhan State Technical University**. Since the late 1980s Professor Zaitsev has been studying and educating students in the biodiversity of the Caspian Sea in the Russian sector, and thus has a broad perspective of changes in the north Caspian ecosystem over the past 20 years. His presentation gave the workshop an overview of the seal population decline and past, present and potential threats. In particular, he highlighted the commercial kill as being the primary cause of the past decline, and continuing killing, including scientific killing, fisheries by-catch, industrial development, pollution of the sea, recent epidemics of canine distemper virus and negative impact on the food chain by the comb jelly *Mnemiopsis*. Professor Zaitsev commented that in its present weakened state, even human impacts which may seem to be relatively minor may have drastic consequences for the species. He concluded by recommending a moratorium on both commercial and 'scientific' killing of Caspian seals.

Dr Igor Mitrofanov, research associate at the Biology Dept, McGill University, Canada is an ichthyologist who was the Caspian Ecotox project fish specialist in 2000–02 and was the Biodiversity Specialist for the Caspian Environment Programme 2005–07. In his workshop presentation, Dr Mitrofanov reviewed the history of introduced and invasive species into the Caspian throughout the 20th century, and reviewed the impact of *Mnemiopsis* on the ecosystem and examined the interaction between the *Mnemiopsis* invasion and the stocks of tulka (kilka), *Clupeonella* sp. The commercial tulka fishery began c. 1925, rapidly

increased from the 1950s due to the introduction of mechanical fishing methods, peaked c. 1970, and has been declining rapidly to the present day. Dr Mitrofanov explained how *Mnemiopsis* predation on zooplankton and tulka eggs and larvae negatively influences tulka populations. However, he emphasised that the present unstable situation is due to an interaction between over-fishing and *Mnemiopsis* predation, which will continue to devastate the Caspian food chain unless corrective measures are taken. He believes that the step which must be taken is to eliminate or greatly reduce fishing pressure on tulka.

Dr Simon Goodman, of the University of Leeds, UK, presented a paper describing the work of the UK government Darwin Initiative Caspian seal project (2006–10) and the ongoing work of the Caspian International Sea Survey (CISS) team. CISS is an international consortium of seal biologists established in 2004 to conduct ecological research on Caspian seals and to advise government agencies and other regional stakeholders on Caspian biodiversity conservation policy. CISS work is currently coordinated and funded via the University of Leeds, with Dr Goodman as scientific director. Dr Goodman is an evolutionary and conservation biologist. His current work focuses on the genetics of disease susceptibility, the role of evolution in disease emergence, the impact of disease as a conservation threat, and marine mammal conservation.

Dr Goodman's presentation provided an overview of this work, which has had several objectives –

- scientific capacity building in the Caspian region in the field of conservation biology focusing on the Caspian seal,
- identification and elimination of threats to the Caspian seal,
- annual aerial survey of Caspian seals over the winter ice-breeding grounds to determine annual pup production, breeding seal density distribution over the ice and recent trends in the size of the breeding population of seals,
- satellite telemetry of Caspian seals to determine their local and long-distance movement patterns, dive patterns, foraging areas and adoption of positions on the winter ice-field,
- monitoring of seal haul-out sites throughout the Caspian, local studies of diet from scat samples, monitoring of viral disease patterns
- establishment of seal protected areas.

Dr Goodman explained the methods and presented the principal results of the annual aerial survey 2005–09. The number of pups in 2005 was approximately 21,000, yielding an approximate total population estimate for the species in the region of 100,000 seals. Between 2006 and 2009, however, the number of pups has fluctuated between about 6,000–8,000 (2007 and 2008) and 15,000–17,000 (2009 and 2006 respectively). These figures are indicative not only of an ongoing decline, but also instability in the reproductive capacity of the population.

2. *Seal population decline.* A quantitative analysis of the decline in the seal population over the past century has been carried out by **Dr Tero Härkönen of the Swedish Museum of Natural History**. Dr Härkönen is the team leader of the current annual aerial survey of the Caspian seal population on the winter ice-field, which has been ongoing since 2005. He and his colleagues from the Baltic introduced an

adaptation of the aerial survey method, which has been used for the past 20 years in the Baltic, to the Caspian. His co-author, Dr Simon Goodman presented this paper. The presentation showed how a model using the current aerial survey census data as anchor point and 'back-casting' a demographic trajectory consistent with the biological parameters of the population and the recorded number of animals killed in the commercial hunt over the past century allows an assessment of the influence of hunting effort on population trajectory to be made. The number of pups born in 2005 was approximately 21,000. Hind-casting from this point has estimated the total population c. 1930 as close to 1 million, with about 106,000 pups born c. 1945. The commercial hunt has been the primary instrument of the decline to the 1990s, since when continued hunting and other factors such as fisheries by-catch and industrial development have combined to drive the population into a continued decline with unstable breeding success and excessively high juvenile mortality. Because of this steep decline over the past three generations of seals and the continuation of the causes of juvenile mortality, the seal was listed as 'endangered' by IUCN in October 2008.

3. ***Poaching with nets and seal by-catch in Caspian fisheries.*** Caspian seals are caught as 'by-catch' mainly in bottom-set nets for sturgeon, in 'wall nets' for other fish such as mullet and encircling nets for coastal fish such as roach. Seals are also harpooned by during kilka and other fisheries. They may also be caught in nets set with the intention of catching seals.

The combined problem of fisheries by-catch and both legal and illegal hunting in Dagestan over the past three years was presented by **Dr A. Kondakov of the Southern Research Centre of the Russian Academy of Sciences**. Dr Kondakov specialises in seal population structure, behavior and ecology and is currently a member of the working group of the Caspian seal on the Russian Marine Mammal Council. Dr Kondakov considers, from the results of his fieldwork, that the number of mature animals taken each year, mainly by poachers, in the north-west Caspian is of the order of several thousand animals. He considers that these operations may be catastrophic for the Caspian seal population. However, he thinks that, given the current socio-economic and political situation in Dagestan, legal protection alone will not solve this problem.

In recent years seal mortalities of up to several hundred animals have been reported in the spring along the northern shore of the Mangyshlak peninsula. At the workshop, **Dr Aidyn Kydyrmanov of the Institute of Virology and Microbiology in Almaty** presented a summary of the results of his investigation into the deaths of several hundred seals, mainly adults, found in May 2009 in an advanced state of decomposition along the shore between Bautino and Cape Urdyuk and on the western shore of Kulali. As in previous years no sick or dying animals were found, which contra-indicates disease or pollution incident. These seals showed signs of drowning, and Dr Kydyrmanov concluded that most of the seals died probably between December to March in fishing nets as a result of intensive fishing.

Fisheries by-catch of seals in the Caspian was also discussed in other presentations at the meeting. The problem of seal deaths in fishing operations in Iran has been officially recognized since the studies by Dr Hormoz Asadi during the

World Bank Ecotox project in which all causes of seal mortality were investigated in 2000–01. The results of that study were that an estimated 500 seals died annually in fishing operations along the Iranian coast. Since then a programme (under the UK Darwin Initiative Caspian seal project, 2006–10) of conservation biologists working with fishermen's cooperatives and coastal game wardens has seen a gradual change of attitude by fishermen over the past few years and a reduction in by-catch along the Iranian coast. Recent successes in this programme were reported to the workshop by **Ms Delaram Ashayeri of the Plan for the Land Society in Iran**. Ms Ashayeri is a wildlife biologist currently coordinating the Darwin Caspian seal project in Iran. Of seals found dead along the Iranian coast since 2006, the project found that 30–40% were killed by fishermen's harpoons, about 15% were drowned in nets, 10% had been shot and the cause of death of 30–40% was not identified. The project is now focusing on public awareness, education, and financial incentives to fishermen for not killing seals.

Another related project concerning fisheries by-catch in Iran has been carried out by **Dr Reza Shahifar, Director General of Conservation and Reconstruction Marine Fish Resources, Iranian Fishery Organization**. Dr Shahifar is a marine biologist and fisheries specialist who has been working for more than 20 years in both Iranian Fishery research Organization (IFRO) and Iranian Fishery Organization (IFO). At the workshop, Dr Shahifar presented the results a questionnaire survey he recently carried out with Iranian fishermen's cooperatives involving more than 354 fishermen. The general findings were that fishermen knew little about Caspian seals, but generally were developing a positive attitude towards them. For religious reasons, seal products are not used in Iran, and thus there is no commercial incentive to kill seals deliberately.

4. *Lessons from the Baltic and Lakes Ladoga and Saimaa on mitigating fisheries by-catch of seals.*

Mr Ivar Jüssi, a conservation biologist with the Environmental Board in Estonia is responsible for establishing conservation and management plans for seals in Estonia, is a team member of the Baltic ringed seal population survey team and is currently leading the winter Caspian seal aerial population survey. He also contributes to the HELCOM and ICES working groups on marine mammals. He presented an overview of the problem of by-catch of grey seals in the Baltic, where an estimated 1,000 seals die in fishing traps, mainly in inshore waters, every year. This problem is being tackled by making the traps 'seal safe' by making protective grills at the trap entrance (to prevent seals gaining access) and constructing the trap mesh from 'dyneema' twine, which seals cannot bite through or tear. However, fishing traps seem to be little used in the Caspian.

Dr Tero Sipilä of Metsähallitus, Natural Heritage Services in Finland is Director of the Saimaa ringed seal monitoring and protection project. presented the results of recent work on Lake Ladoga seals and the critically endangered Saimaa seals. In Lake Ladoga it is estimated that more than 350 seals (from a total population of around 3–5,000 seals) are caught annually in fishing nets and on baited hooks, and this figure is thought to be increasing. Scientists have now proposed to prohibit these types of fishing in the vicinity of the northern breeding area in the winter-spring breeding

season in the areas where seals gather during the moult and subsequently between May to September. A public education programme is also now underway. In Lake Saimaa 90% of seal by-catch occurs in gill-net fishing, 70% of this mortality affects juveniles less than one year old, and most of this mortality occurs in May and June. The problem of adult mortality in gill nets has already been successfully tackled by prohibiting the use of strong mesh gill nets. To tackle the problem of weaned pups being caught in nets there is now a total ban on net and fish baited hook fishing between April 15 and June 30 in areas covering 60–80% pupping sites. This has been shown to reduce juvenile mortality by 10%, which, although a small improvement, could prove to be significant in the long term. In 2010 the protected area will increase from 810km² in 2009 to 1500km².

5. ***Ongoing studies of Caspian seal pathology and the epidemiology of canine distemper virus in Caspian seals.*** **Dr Aidyn Kydyrmanov, Institute of Virology and Microbiology, Almaty** presented the history of the pathology diagnosis by the Ecotox project team of the epizootic which killed several thousand Caspian seals in the spring of 2000. Dr Kydyrmanov specializes in veterinary virology, particularly of seals, and participated in sample collection from seals dying in the 2000 for the Ecotox project. In his presentation he explained the diagnostic tools used to investigate the mortality and reach the conclusion of CDV as the primary cause of the mortality. It is thought that the very high mortality in 2000 was due to the virus entering a previously unexposed population, which therefore had no resistance to it. Dr Kydyrmanov then continued to describe the Caspian seal project's continuing monitoring of Caspian seals for infection by CDV and other viruses. In November 2008, 6 of 13 seals sampled from the Tyuleni islands in Kazakhstan were found to have positive results for CDV virus testing, although all of these seals were clinically healthy. This suggests that CDV may now be endemic in the population, but is no longer causing large-sale mortality.

6. ***Impacts of industrial developments on Caspian seals.*** **Dr Sue Wilson of Tara Seal Research in N. Ireland, UK** gave two presentations discussing the impacts of industrial shipping on breeding seals on the winter ice-field and on the potential for chemical pollution of the Caspian food chain from industry and agricultural run-off to have a negative impact on seal reproduction and immune system. Dr Sue Wilson is a consultant seal conservation biologist, specializing in ecology, behaviour and animal welfare. She was coordinator of the Caspian Ecotox project's seal team in 2000–02 as well as the ongoing Caspian seal project.

Sue Wilson reported on studies in 2006, 2008–09 relating to the impact of icebreakers passing through Caspian seal pupping grounds. The extent of overlap between the icebreaker routes (determined from ship GPS locations) and sea pup density distribution (determined from the aerial survey in these years) has varied in these years according to whether pupping females were using cracks or channels in the ice created by the ships as leads into the ice, and were therefore densely concentrated in these areas, or whether females were using natural leads into the ice and were distributed independently of the icebreaker routes and only encountered occasionally. Qualitative and quantitative data were presented to show how the passage of ships close to seals can result in displacement of mother and pup from their natal site and

water access holes, separation between mother and pup, and how the pups' welfare and survival may be affected. Mitigation measures are recommended to reduce the impact and set a precedent for a code of best shipping practice in relation to ice-breeding seals.

Sue Wilson also reported on the implications of contaminant levels in Caspian seals. This work was carried out mainly during the Ecotox project 2000–02, when chemical contaminant levels in seal blubber and liver were analysed from samples taken from seals which died during the canine distemper virus epizootic in 2000–01. The mass mortality of some thousands of seals in 2000 was first reported from Kazakhstan and then spread throughout the Caspian. It was widely believed by the media that the mortality was caused by persistent organic pollutants (POPs) released into the sea by the oil industry. However, the Ecotox veterinary pathologists found that the principal cause was in fact canine distemper virus (CDV). Following from this the view prevailed – and still prevails in the public view – that the seals were particularly susceptible to CDV because their immune systems were weakened by exposure to pollutants released by the oil industry. It is also widely believed that Caspian seal fertility has been impaired by POPs, and that this may be a significant contributor to the population decline. In this presentation this view was examined by comparing contaminant levels found in Caspian fish and in dead Caspian seals with those occurring in fish and seals in experiments in which the immune systems and reproductive capacity of captive seals were shown to be affected by feeding the seals with contaminated fish from the Baltic and comparing them with seals fed on less contaminated fish from the Atlantic. The levels of POPs in Caspian seals and in Caspian fish were generally found to be much lower than those found to cause impairment of the immune and reproductive physiology. In the presentation the contaminant levels in dead seals diagnosed with CDV were compared with those dying from other causes, and found to be generally lower in the CDV positive seals. It was therefore concluded that the 2000 seal mortality was a natural event, caused by the virus infecting a naïve population, and was not related to POP levels in the Caspian food chain.

7. ***The threat of climate change to Caspian seals.*** Ms Lilia Dmitrieva, Department of Biology, University of Leeds, gave a presentation to the workshop on future scenarios for the Caspian seal if the winter ice coverage of the north Caspian continues its present trend of reduction of ice coverage on the north Caspian. Lilia Dmitrieva, originally from the University of St Petersburg, is a co-coordinator of the Caspian seal project. She is a specialist in the ecology and conservation biology of ice-breeding seals and is a team member of both the Baltic and Caspian annual aerial surveys. In her presentation she explained how several species of Arctic seals, including those not currently endangered, may be impacted in the future by reduced or vanishing winter ice cover on which they depend for successful reproduction. The ice coverage in the north Caspian has declined in the last three decades. Up to the 1960s the seal breeding ice extended as far south as Aktau and the Azerbaijan border, while today it extends south only to Bautino and northern Dagestan. A particularly poor ice year in 2007 resulted in pups being concentrated near the shore of the NE Caspian, and very poor pup survival that year. If poor ice formation in the Caspian

should become more frequent in the future, the prospects for the Caspian seal are bleak. Although Caspian seals can pup on ice-free islands (such as Ogurchinsky in Turkmenistan), a study on Baltic grey seals has shown that their success is likely to be lower than on ice, and there are very few undisturbed areas in the Caspian where pupping could take place. Protected area designation and impact assessments for industrial development must take account of predicted shifts in habitat due to climate change.

8. *The way forward: implementation of seal conservation action plans.*

Dr Dave Thompson, Sea Mammal Research Unit, UK, gave a presentation to the workshop on conservation action plans for seals. Dr Thompson's research interests include seal behavioural ecology and energetics and he is currently the principal scientific advisor responsible for generating annual advice on seal populations to the UK and Scottish Governments.

In his presentation he described the range of conservation action plans that have been developed for seal, sea lion and fur seal (pinniped) species which were (like the Caspian seal) previously abundant, but which have suffered either dramatic or longer-term population declines. In some cases that he described the cause of the decline (excessive hunting) was clear and the required action (stopping hunting) was equally clear. Given that hunting stops, it has been shown that seals in a healthy environment *can* recover from severe depletion if hunting was the principal cause of the decline. However, in most of the currently declining populations of pinniped species there is no clear/simple explanation for the decline and no simple clear explanation for failure to recover, and there is usually a suite of problems to be first identified and then overcome.

A management strategy evaluation (MSE) requires specifying clear management objectives and developing quantifiable performance measures for each objective. He gave the example of the Eastern Pacific northern fur seal, which shares similar concerns to the Caspian seal in having a large population in recent past, until recently being heavily exploited, suffering an ongoing population decline and probably complex interacting factors. The conservation goal to promote recovery of the northern fur seal to 60% of peak historical levels (or lower if evidence of shift in carrying capacity). The first objective is to identify and eliminate or mitigate the cause or causes of human-related mortality. This objective includes improving understanding of the sources and effects of marine debris, improving assessments of incidental take of fur seals in commercial fishing and evaluating harvests and harvest practices. A detailed breakdown work to be undertaken in these areas could provide a model for similar work in the Caspian.

An approach taken for South American sea lions in the Falkland Islands involves categorising threats into high, medium and low priorities. It is illegal to take, wound or kill any marine mammal in the Falkland Islands. Conservation action plan aims are to A. Determine population abundance, trends and recovery, B. Identify important breeding and feeding areas, C. Protect habitat important to the survival of the species, D. Monitor and manage the potential impacts of prey depletion due to over-harvesting, E. Monitor climate and oceanographic change and F. Effort and funding issues.

For Steller sea lions Much of the conservation effort was focused on eliminating the most direct and certain causes of decline (e.g., shooting, incidental take in fishing nets). These include the following: reduced disturbance of important rookeries and haulouts, reduced by-catch of SSL in commercial fishing operations, reduced shooting at or near SSLs, and increased knowledge on the status, foraging ecology, and survivorship of Steller sea lions.

For the endangered Hawaiian monk seal, the costs over a 5-year plan of alleviating the threats have been divided into tackling the 'crucial threats' (food limitation, entanglement in debris, shark predation –\$17,320,000), 'serious threats' (infectious diseases, habitat loss, fisheries interaction, mis-directed adult male aggression, human disturbance - \$8,295,000) and 'moderate threats' (biotoxins, vessel groundings, contaminants - \$700,000).

Mr Ivar Jüssi also gave a presentation on the ways in which seal conservation is integrated into the trans-boundary agreement (HELCOM) between the nine Baltic countries on conservation of the Baltic ecosystem. The Baltic and Caspian seas are in many ways analogous, in that both are totally enclosed (the Caspian) or nearly enclosed (Baltic) systems. Both are surrounded by several independent littoral states, both have ice forming in the winter in the northern sectors on which seals breed, both have had long histories of seal hunting and seal population decline, and both have suffered from industrial development and pollution. The ways in which HELCOM contributes to resolving these issues with regard to the Baltic seal populations seals is therefore of direct relevance to the Caspian situation.

Dr Hamid Ghaffarzadeh, CaspEco project manager, Caspian Environment Programme presented to the workshop the Caspian Seal Conservation Action Plan (CSCAP). This was developed by the Caspian seal project team of scientists, modified and agreed by the Caspian Seal Conservation Network of regional scientists (CSCN) in September 2006, taken forward by the Caspian Environment Programme and ratified by the governments of all five Caspian countries in April 2007. The CSCAP is based on experience of transboundary conservation action plans for seals in the Baltic (HELCOM) and in the Wadden Sea. The plan includes country specific action points, based on habitat usage by seals, the proportion of the seal population using territorial waters through the year, and the threats to the seal population acting in each country. Outline conservation measures include habitat protection and restoration, prevention of illegal hunting and by-catch, and reduction of disturbance by shipping. As yet no Caspian countries have officially implemented any recommendations from the plan, although via the CaspEco project the countries are now beginning consultation to develop protected areas. Without implementation of the action plan the Caspian seal population will continue to decline.

Dr Alexei Zimenko, General Director of the Biodiversity Conservation Center, Russia gave a presentation on the work that his NGO is doing to promote protected areas for Caspian seals in Russian territory. This effort currently includes a campaign for development of a network of 'natural areas of preferential protection' (NAPP), to include restoration of former habitat of Caspian seals in Russia, such as the Tyuleni

islands in Dagestan and surrounding waters. This programme should include measures to mitigate against the effects of climate change and should work with industrial developers, including the oil and gas industries to minimize industrial impact.

Questions raised and comments from workshop participants

A number of comments, raised by Kazakh NGOs and academics, will be summarized here (organized loosely into subject matter). Contributing speakers were:

Alexei Zimenko (AZ) (Biodiversity Conservation Center, Russia)

Max Bokayev (MB-KT) (Kaspi Tabighaty)

Prof. M. Diarev (MD) (Institute of Oil and Gas, Atyrau)

Prof. T. Yergaliyev (YT) (Institute of Oil and Gas, Atyrau)

Andre Serge Mikouiza (A-SM) (International Institute of Oceanography, Astrakhan)

Dr Gayirbeg Abdurahmanov (GA) (Department of Ecology, Makhachkala University, Dagestan)

Mirgaly Baimukanov (MB-IHE) (Institute of Hydrobiology and Ecology, Almaty)

Dr Tariel Eybatov (TE), Museum of Natural History and Institute of Geology, Baku

Mikhail Verevkin (MV), University of St Petersburg

Respondents from the workshop speakers were: Simon Goodman (SG), Sue Wilson (SW), Igor Mitrofanov (IM), David Thompson (DT), Ivar Jussi (IJ), A. Kondakov (AK), Viacheslav Zaitsev (VZ), Reza Shahifar (RS).

BY-CATCH

MD asked AK whether he made records of by-catch in Dagestan on a scientific basis. AK replied that that was not the main focus of his work. MD asked if AK thought the number of dead bodies had increased. AK replied that he did not know. A-SM asked if anyone has by-catch data and its impact on the population and suggested looking for funding for such a study. VZ said that he thought that re-educating people in coastal communities was essential, and thinks such education should be obligatory in schools.

AZ pointed out that seal by-catch in fisheries occurs not only in Russia. He points out that the information on by-catch rates in Dagestan (averaging 10-15 seals per 2 km nets) is very valuable information. He said that the problem seems to be outside the scope of country governments to deal with the issue, because they cannot control it.

GA commented that many years ago seals and people both lived in Machkachkala region, but on a field trip this year (2009) to Tyuleni Island he found only one dead seal. In Dagestan they hunt pups for their fur, but said that products from by-caught seals are not used. He said that the Astrakhan Institute provides quotas to Dagestan, and that it is time for them to stop issuing licenses.

SG raised question of developing alternative livelihoods for coastal communities. He asked how we can get government action, and requested people to submit ideas by lunch-time on 2nd day of meeting.

POLLUTION

MD commented that both seals and sturgeon are declining and nobody will admit this because of environmental pollution. Why are they dying out now? You have said nothing and given no reason for their decline.

SG responded that the main reasons for the decline to date have been commercial and scientific hunting, poaching, by-catch in sturgeon nets, development of the coastline, disturbance of seals and over-fishing. People killing seals directly is the main reason for the decline.

MD commented during a general discussion that there is no protection for seals in any of the five Caspian countries. The Tehran Convention is not fully enforced. The north part of the Caspian is the most vulnerable part of the Caspian to pollution on account of its shallowness – if there is an oil spill, the toxic impact will be highest in the shallow north Caspian. The oil production emissions threaten the Caspian environment. Why don't you tell the international organizations about the impact of toxic contaminants and pesticides on seals? Nobody is studying the health status of Caspian seals.

SW – as the representative at the meeting from the Ecotox project, which has studied the effects of pollution – was asked to respond. She explained that the Ecotox project was actually initiated in 1997 with a full suite of tests on the blubber of dead seals on the Apsheron peninsula, which area was, at that time, suffering considerable chronic oil pollution of inshore waters from flooding of derelict oil installations. Despite this very polluted environment, hydrocarbons were not detected in the blubber of the dead seals. The reason for this is probably that seals are able to metabolise hydrocarbons very rapidly, and therefore these substances do not accumulate in the body tissues. Some work has been attempted elsewhere to look at the activity of enzymes in seal liver which are involved in contaminant detoxification. However, such enzyme activity is difficult to monitor (requiring either a freshly killed animal or an invasive biopsy technique) is not specific to hydrocarbon metabolism and could also indicate detoxification of organochlorine compounds (such as DDTs and PCBs), which are already known to be quite high in Caspian seals.

At an informal discussion later, with respect to 'health sampling', MD suggested to SW that lethal sampling be carried out of a substantial number of seals in Kazakh waters in order to test exhaustively for oil industry contaminants. SW replied that it

was the policy of the Ecotox project, and is also the policy of the ongoing international seal projects, not to kill seals for scientific sampling, although we have an ongoing programme of live sampling (non-lethal and non-injurious) to monitor the health status of seals in Kazakhstan. Apart from ethical issues, lethal sampling is contrary to the aims of the CSCAP and would be an inappropriate measure to take for an endangered species. However, MD did not accept or agree with this point of view and insisted that our 'health sampling' sampling size is too small, and that we should kill, say 100 seals at a time for such sampling.

MB-KT raised the threat of potential oil spills. He said that the foreign companies operating in the Caspian will not cover damage caused by potential oil spill. A Caspian seal conservation plan should embrace all such possible threats. Oil tankers currently discharge their bilge waters into the Caspian. There is additional concern that some tankers are only single-hulled. He suggested collecting signatures to a petition asking for a moratorium on oil production as well as for action to prevent illegal sturgeon fishing.

SG responded that the conservation plan should be aware of tankers. However, a risk analysis of ongoing threats should be carried out to calculate the potential risk and likelihood of major spills. The risk to seals is probably quite low relative to the risk of – for example – by-catch, which is a bigger concern on an ongoing basis.

AZ commented that of course any oil-related pollution is one of the most important factors affecting biota. However, he clarified that he was referring to general impact on the ecosystem, and not a direct impact on seals. IM pointed out that oil spill response is already covered by a separate protocol under the Tehran Convention, although agreement has not yet been reached.

DT pointed to a parallel with the North Sea, where grey seal populations have been increasing during the past decades of oil exploration, and the main threats to harbor and grey seals in these waters has not been related to the oil industry, but to interactions with fisheries and direct killing. In the Caspian we have an endangered and rapidly declining seal species, and the most urgent need is to stop the factors which are currently driving the seal population down – while we have been talking in this room, about 30 seals will have died in fishing nets.....

CONSERVATION ACTION PLAN

Point of information: The current Caspian seal framework conservation action plan (CSCAP) has been developed under the auspices of the Tehran Convention, and agreed in 2007 by all five Caspian States. It is, however, a voluntary plan and not a legal protocol to the Tehran Convention.

AK stated that he believed that the number of seals dying in nets in Russian territory is much higher than the official quota for seal take in Russian territory (c. 8,000 seals p.a.). Realistic conservation measures are required, particularly with regard to the only island in Russia still used by seals – Mala Zemchuzniya. For Russian poachers, this is just a way of life, and Russian government is not tackling the problem.

AZ said that his NGO had written to the Ministry of Natural Resources in June 2009 to ask about the status of the Caspian, and received the reply that the Caspian environment is not impacted by anything and that fisheries have no impact on the Caspian seal; catches of sturgeon and salmon have remained high in recent years.

MB-IHE stated that Government representatives, for example from the Kazakhstan Fisheries Committee, should be at future workshops. Recommendations from this workshop should include setting up of a committee to deal with the authorities, for example when special protected areas for seals are being discussed.

AZ stated that the NGO 'Russia Wild Nature Conservation' will act on behalf of NGOs in Russia with regard to development of Caspian seal protected areas in Russia. He suggested there should be:

1. The development of a draft National strategy for Caspian seal conservation in Russia
2. Preparation of a draft Caspian seal plan as an official protocol to the Tehran Convention
3. He suggested that their proposed NAPP (Natural Areas of Preferential Protection) should be a means of restoring control over the use of Caspian bioresources, and should include Tyuleni Island and adjacent area into a Dagestan reserve. WWF has some involvement in this proposal. Lethal fishing gear would be prohibited within this area. He also expressed concern over development of the Volga delta area, which is not currently protected. He referred to the website of the Biodiversity Conservation Center - www.biodiversity.ru/programs/seal.

TE added the caveat that when Shakhova Kosa (a well-known seal haul-out site on the tip of the Apsheron peninsula) became a National Park area a few years ago, the seals disappeared from it.

MD raised the issue of the construction of 35 more artificial islands in the Kashagan oil field in the NE Caspian and the problem of shipping (raised in SW's presentation on icebreaker impact on breeding seals). He suggested that if the development of the oil industry infrastructure forces seals out of this area, they will have nowhere to go. He suggests the creation of artificial islands for seals. He says that oil companies are not 100% honest – 'he who pays the piper calls the tune'. First there are flares etc, and then dead seals found, and contamination is accumulating.

DT points out that in many cases investigated the actual facts turn out to be rather different from the public perceptions

With regard to prioritizing needs for conservation action, MV stated that we have no data on habitat loss or on acute pollution events, so these factors should not be treated as if they are a known cause of decline. Another speaker stated that commercial hunting (in Kazakhstan) contravenes the law, and the Government should do its job in protecting the Caspian seal. The Government has already allowed the oil industry to build all the artificial islands etc.

BM-IHE expressed the view that we cannot prioritise the threat factors because we do not have sufficient information – we only have opinions. We can, however, prioritise research needs.

A-SM expressed the view that the CSCAP is too broadly based, and many items in it are not directly relevant, and suggested making new proposals. MB-KT raised questions about the participation of governments. IM responded by explaining we cannot change the current CSCAP because it has already been signed by ministers. He emphasized that the signing of this document means that they agree it would be *good* to implement it, but the agreement doesn't mean the measures *have* to be implemented. AZ said that no plan would be perfect – the present plan could be eventually agreed as a legal document – we should focus on implementing the plan. Since the CSCAP already exists, we should focus on getting this implemented at a national level. Further progress will depend on cooperation at an inter-governmental level. We should decide what needs to be done in next couple of years. The CSCAP could be attached to a report of this meeting. AZ expressed surprise concerning efforts to prioritise threats to seals – he thought that the problem is multi-factorial and to highlight one factor could be misleading. AK thought that the Fisheries agency in Moscow might be persuaded to take an interest in the Caspian seal problem.

IM suggests that it may make more economic sense to somehow pay poachers not to fish for sturgeon rather than to pay for patrol boats (this recalls SG's request for ideas on developing alternative livelihoods for poachers). IM also suggests the CSCAP should be revised every five years. He also raised the issue of having a Regional Seal Centre – this should be discussed among countries, or with the Bioresources Commission (CAB). The Centre should have legal rights, and funding would be required.

RS pointed out at all sturgeon so-called conservation is lies - and pointed out that the hotel hosting this conference is serving beluga in its restaurant.

TE said there should be strict penalties for killing seals. In Soviet times there were fines for killing seals, with a jail term of up to two years. He suggests that the public should be informed by the media about the penalties for killing seals, and government authorities should be mobilized to enforce the law.

IJ suggested that fishing methods could in some cases be changed to using fixed gear – which can be made seal-safe (as in the Baltic experience), although this depends on the target species.

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Resolution reached by the workshop participants

The workshop participants reached a consensus that the principal causes driving the Caspian seal population to decline are:

1. Crucial threats

Hunting

By-catch

Poaching

These crucial threats should be given the highest priority at the present time

2. Serious threats

Prey availability

Habitat disturbance/destruction

These serious threats should be given high to moderate priority at the present time

3. Moderate threats

Pollution of food-chain by POPs

Disease

Ice reduction due to climate change

These moderate threats should be given moderate to lower priority at the present time

The participants called for the existing conservation action plan (the CSCAP, already ratified by all five Caspian countries) should be implemented immediately.

Resolutions on addressing the crucial threats were:

- The direct killing of seals is the absolute priority that has to be addressed, with emphasis on the current critical importance of fisheries by-catch and poaching.
- Apply pressure through Tehran convention to immediately reduce direct take including drowning of seals in nets and deliberate killing. This is an essential first step to ensure survival of the species.
- Development and enforcement of protected area network
- Support the initiative of Kazakhstan in establishing the national park
- Adopt quantitative conservation targets (eg Modelled on HELCOM) with timeline
- Need for regional cooperation at the inter-governmental level. Draw attention of governments to the necessity of conserving the Caspian seal.
- Emphasize necessity of transparency in all conservation/management decisions.
- undertake all possible efforts to increase public awareness.

It was agreed that despite the recent research efforts, there are still major gaps in our knowledge that are essential for quantifying the crucial threats and their impact on the seal population dynamics. These gaps include

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- Total mortality rates
- Estimate fishing related mortality (legal & illegal)
- Reproduction parameters
- Diet and foraging success
- Habitat use

Of these, currently by-catch is most important. The lessons brought to the workshop from elsewhere is that the problem in the Caspian is by no means unique – seriously affecting also seals in the Baltic, Lake Ladoga and Lake Saimaa. In Lake Saimaa the by-catch of adults in gill nets has been greatly reduced – almost to zero - by prohibiting the use of strong-mesh gill nets. However, in much of the Caspian the main problem seems to be by-catch in monofilament ‘wall’ nets and bottom-set sturgeon nets. These nets appear to be virtually invisible to seals, and once entangled they cannot escape. Possibly there could be further discussions with Dr Sipilä in Finland to learn in more detail the type of fishing net from which adult seals are able to escape. Fishing nets and baited hooks are also prohibited near the spring and summer moulting and haul-out areas. This could potentially be applied to the Caspian by establishing fishing exclusion zones in the waters surrounding the most important seal moulting areas and summer/autumn haul-out areas. The modification of fishing gear described for the Baltic applies mostly to fish traps which appear not be used in the Caspian.

The one measure in Lake Saimaa which has produced measurable – albeit modest – success in reducing fishing mortality of weaned pups by 10% is the introduction of fishing exclusion zones close to pupping areas for a 2½ month period from April 15 to June 30. In 2009 the protected area covered 60–80% of the pupping sites, with a total area of 810km². However, in 2010 this will be increased to 1500km². In order to apply this measure to weaned pups of the Caspian, more knowledge of the movements of pups immediately after the ice-melt would be necessary. It is assumed that the pups disperse from the pupping areas while learning to feed, probably initially in relatively shallow water, but the principal directions of travel and the rate of dispersal is not known.

The establishment of fishing exclusion zones would require government agreement and participation in establishing protected areas. A plan to begin the development of a network of protected areas is currently underway under the CaspEco project. Progress on this will be reported back to this group of workshop participants at the next meeting.

Another approach to addressing the problems of by-catch and poaching was also discussed, which is encouraging – by means of government grants and small funding

projects – of alternative livelihoods to local fishing communities. Possibilities that have been suggested include shore-based sturgeon farming and eco-tourism.

The workshop participants would like to thank Agip KCO for organizing, funding and hosting this workshop. The participants decided that a further meeting should be held in about a year's time to monitor progress in implementing the CSCAP. An offer was received from the Southern Scientific Centre of the Russian Academy of Science in Rostov to host the next meeting of this Caspian seal conservation group.