

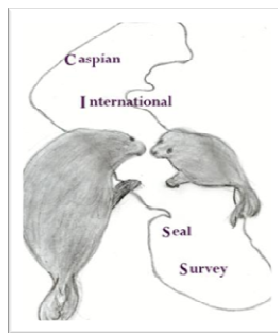
**The start of a new programme for assessing the distribution,  
habitat and health status of Caspian seals (*Phoca caspica*)**

***Caspian International Seal Survey (CISS)***

Simon Goodman and Sue Wilson (Eds)

**Report prepared under contract to CEP**

December 2006



## 1. Introduction

A new phase of scientific study began in 2005, led by an international team of seal biologists known as the Caspian International Seal Survey (CISS). This new phase was initiated as a result of some outcomes of the Ecotox project (2000-02), which diagnosed canine distemper virus (CDV) as the main cause of a mass mortality in 2000-01 (Kennedy et al., 2000; Kuiken et al., 2006; Eybatov et al., in prep.) and quantified organochlorine and metal contaminants in both Caspian seals and fish (Kajiwara et al., 2002). This highlighted serious concerns about seal population status, health status, seal-fisheries interactions and continued hunting of seals.

The new CISS phase has two main components. The first is an assessment of Caspian seal pup production and trends and total population size by means of aerial survey of breeding seals on the winter ice-field in the Northern Caspian. Two annual surveys have now been carried out by the CISS team, in February 2005 and 2006 (Härkönen et al., in prep), and further annual surveys are planned over the next three years. A preliminary estimate for total pup production is of the order of 20,000 pups annually, with an estimate for the total population is about 111,000 seals. There has been an estimated annual decline of 4% in the fertile female population average over the past 45 years. These preliminary population estimates estimate will be further refined as the annual survey series progresses.

The second component is a monitoring programme of Caspian seals in all parts of the Caspian. This programme aims to document the following:

- Seal distribution and documentation of haul-out sites throughout the Caspian
- Seal health status
- Human influence on seal habitat
- Seal-fisheries interactions
- Seal diet

The ongoing results of both these components will inform the Caspian Seal Conservation Action and Management Plan (SCAMP). Both components will be mitigated through the newly establishing Caspian Seal Conservation Network (CSCN), which is a network of seal scientists working together in all areas of the

Caspian to collaborate, complement each other's work and to build a shared database. The CSCN will be developed through supplementary training of regional scientists in specialist techniques and a cooperative programme of seal monitoring work through the UK Darwin Initiative Caspian seal project.

The CEP project reported here is part of this process. The contract preceded the start of the Darwin project and has therefore been instrumental in enabling the initial stages of the Darwin project.

Specifically, this CEP project has enabled

- ✚ A Russian-speaking CISS team specialist (Lilia Dmitrieva) to coordinate regional scientists in attending the Darwin inception meeting, 1<sup>st</sup> training workshop and the BISRAG meeting, held in Baku from 14-24<sup>th</sup> September, 2005, and facilitate the start-up of the project.
- ✚ Three CISS team specialists from the UK and Estonia (Paul Jepson, Callan Duck and Mart Jüssi) to attend the Darwin workshop to demonstrate necropsy and live-sampling techniques, to lead seminars and to give talks on their specialist subjects
- ✚ Three scientists from Kazakhstan who attended the Baku workshop (Aidyn Kydyrmanov, Kobey Karamendin and Salauat Kaldybaev) to carry out a preliminary field-sampling expedition in November 2006 to document seal sites in Kazakhstan
- ✚ Two scientists from Iran who attended the Baku workshop (Hormoz Asadi and Leili Shamimi) to carry out preliminary field-sampling expeditions, hold workshops in fishing communities and establish a Seal Conservation Centre in Iran.

This report will summarise those activities and provide detailed reports of the field work in Kazakhstan and Iran.

## 2. The 1<sup>st</sup> Darwin project workshop, Baku 18-24 September, 2006; necropsy and field-sampling techniques

The aim of the Darwin workshop in Baku was two-fold: (1) to carry out live-sampling and necropsies on seals found at or near the seal haul-out site at Shakhova Kosa, close to Baku, (2) to collect faecal samples at the seal haul-out site and analyse the samples for prey remains to determine diet, (3) to provide protocols and teaching materials for this work, which are intended to be used throughout the Darwin project and (4) to conduct seminars and lectures on these topics.

Three expeditions were made to Shakhova Kosa (September 17, 19 and 20), Using a small inflatable boat to reach the island at the tip of the peninsula. On none of these three occasions were any seals to be found, either live or dead, and no traces of seal (tracks or faeces) were found. Large numbers of cormorants were found on the island and jackal tracks were found on the beach. Some dead mullet were also found on the beach. A helicopter flight over another seal haul-out site, Zhilhov Island, (lying about 5 km to the east of the peninsula) similarly recorded a zero seal count<sup>1</sup>.

Because there were no seals, either alive or dead, neither live-sampling, nor necropsies could be carried out or demonstrated during the workshop. However, lectures and seminars were given and materials with live-sampling and necropsy protocols were provided to all workshop participants. A full live-sampling kit, including recommended anaesthetics was given by Callan Duck to the Iranian team (Hormoz Asadi and Leili Shamimi), in order to facilitate field work immediately upon their return to Iran.

---

<sup>1</sup> Tariel Eybatov, Darwin team leader in Azerbaijan, went again to Shakhova Kosa on November 5 2006, and found seven dead adult seals, but again no live seals. A helicopter flight on December 17<sup>th</sup> again found no seals. A possible explanation may be that there has apparently been poaching and also illegal dynamiting for mullet near Shakhova Kosa. Such activities may have deterred seals from using the site and also resulted in the deaths of some animals.

### 3. Field work in Iran and Kazakhstan, October- November 2006

The Iranian and Kazakh scientific teams began preparations for field work based on the aims of the CSCN and Darwin project immediately upon returning from the workshop.

#### **Iran (see Appendix 1)**

***Work with fishermen to reduce seal kill during fisheries operations.*** Two workshops were held in each of Guilan and Mazandaran provinces for fishermen, game wardens and officials from the Dept of Fisheries. Two similar workshops are scheduled for Golestan province in late December. Presentations on seal biology, ecology and threats were given and ways of reducing the threat from seal-fisheries interactions in Iran were discussed.

The principal outcome was an agreement with pareh net fishermen not to kill seals caught in the nets, but instead to hold them for the seal team, who would come to the scene, take measurements and biopsy samples and release the seal unharmed. Fishermen will be paid per live seal and game wardens patrolling the coast will be paid per dead seal notification. The sums paid are sufficient for it to be economically worthwhile for fishermen to cooperate with the project. This scheme is supported by government officials, for which a memorandum of agreement with the Darwin project is underway. One issue yet to be tackled is the problem of fishermen illegally fishing for kilka and killing seals near their boats.

Plans were drawn up for a project Seal Centre, consisting of office space and equipment store within the Dept of Fisheries building at Bandar Anzali in Guilan province. The establishment of this centre, as part of the CSCN, will help to establish both status and permanence for the project.

***Coastal surveys, measurements and sampling.*** Coastal surveys were carried out in Guilan and Mazandaran provinces. Results obtained principally from Guilan. Of 24 bodies recovered, necropsies on ten were performed by Dr Asadi according to the Darwin project necropsy protocol. Measurements and samples for DNA (skin), diet and organochlorine contaminants (blubber) and age (teeth) were taken. Seal team veterinarians and trainees were present to observe these procedures. Of these ten seals, six were pregnant females, whose embryos were also taken with the other samples.

Of 11 seals sufficiently fresh for superficial examination, one had drowned, while the others had been killed by fishermen, 7 with harpoons and 3 with rifles.

One juvenile seal caught in a pareh net after the workshop was held for the seal team. It was weighed, measured, blubber sample taken and then released unharmed.

## **Kazakhstan (see Appendix 2)**

This preliminary field trip took place between 1<sup>st</sup> and 13<sup>th</sup> November 2006. Seal islands were reached by boat in two areas: Rybachi Island north of Bautino and three islands in the Ural delta region.

**Rybachi island** was chosen because of local reports of 250-300 seals hauled-out there in mid-October. Eighteen seals in total were seen in the water on the outward and return trips, although only nine were hauled out on Rybachi Island when the team arrived. One seal – a small juvenile female (probably less than a year old), was successfully caught in a hoop net and live sampling was carried out in accordance with the Darwin project protocol. This seal had an existing flesh wound on the back, possibly caused by an attack by wolves, whose tracks and resting lair were seen nearby.

On the return trip a freshly dead seal (a juvenile female) was seen in a sturgeon net. The carcase was taken aboard the ship and a full set of samples taken for analysis.

**The Ural delta region** was surveyed by boat over a 3-day period 9-11 September. A total of 21 seals were seen in the water, but no live seals were seen on shore. Two dead seals were found on the shore of SW Island. One had a wound suggesting it had died from a boat propeller wound; a full set of samples for analyses were taken.

## **Summary of Outcomes of CEP project fieldwork**

**Data collected.** The data from all these surveys and the sampling references will be added to the new CSCN database being developed by the Darwin project.

**Samples collected.** Samples collected in Kazakhstan for virology and serology are currently being analysed at the Institute for Virology and Microbiology. All samples collected and not yet analysed are being stored for future analysis as part of the CSCN sample bank, and will be referenced in the new CSCN database. The samples taken in Iran are being held in the DoE lab in Guilan. The pathology samples from Kazakhstan are being held in the Institute of Virology and Microbiology, while the otoliths from faecal sample analysis are being held in the Institute of Fisheries in Atyrau.

**Conservation implications.** This work represents the first step in this new initiative taken by Caspian regional scientific teams in the long road ahead for Caspian seal conservation biology and effective protection for these animals. The two young seals caught and sampled in this study may yield only limited scientific results, but represent an enormous step forward by demonstrating that the biology of Caspian seals can be studied effectively by non-lethal methods. Other biological work is carried out using seal carcasses retrieved from fisheries by-catch, lethal accidents or disease, but not killed by the scientific team. As this work progresses, expands and becomes better-known, it will become the accepted norm in the Caspian region and will replace the old methods of lethal sampling, which still continue to impact on seal welfare and to threaten any recovery of the declining Caspian seal population.

The enormous efforts by the team in Iran to change the attitude and behaviour of fishermen towards seals, and to avoid them being killed when they are caught in pareh nets, are already making a significant contribution to seal welfare and conservation by radically turning the situation around.

## References

### *Published in International peer reviewed journals*

Kajiwara, N., Niimi, S., Watanabe, M., Ito, Y., Takahashi, S., Tanabe, S., Khuraskin, L.S. & Miyazaki, N. 2002. Organochlorine and organotin compounds in Caspian seals (*Phoca caspica*) collected during an unusual mortality event in the Caspian Sea in 2000. *Environmental Pollution*, 117: 391-402.

Kennedy, S., Kuiken, T., Jepson, P.D., Deaville, R., Forsyth, M., Barrett, T., van de Bildt, M.W.G., Osterhaus, A.D.M.E., Eybatov, T., Duck, C., Kydyrmanov, A., Mitrofanof, I. & Wilson, S. 2000. Mass die-off of Caspian seals caused by canine distemper virus. *Emerging Infectious Diseases*, 6: 637-639.

Kuiken, T., Kennedy, S., Barrett, T., Van de Bildt, M.W.G., Borgesteede, F.H., Brew, S.D., Codd, G.A., Duck, C., Deaville, R., Eybatov, T., Forsyth, MA., Foster, G., Jepson, P.D., Kydyrmanov, A., Mitrofanov, I., Ward, C.J., Wilson, S. & Osterhaus, A.D.M.E. 2006. The 2000 canine distemper epidemic in Caspian seals (*Phoca caspica*): pathology and analysis of contributory factors. *Veterinary Pathology*, 43: 321-338.

### *Unpublished reports (includes material in preparation for submission to international peer reviewed journals)*

Eybatov, T., Asadi, H., Bosaret, G., Kennedy, S., Van de Bildt, M.G.W. & Wilson, S.C. 2006. Patterns of mortality in the Caspian seal *Phoca caspica*.

Härkönen, T., Baimukanov, M., Dmitrieva, L., Jüssi, M., Kasimbekov, Y., Verevkin, M., Wilson, S.C. and Goodman, S.J. 2005. Population size and density distribution of the Caspian seal (*Phoca caspica*) on the winter icefield in Kazakh waters, 2005. Report to Caspian Environment Programme, April 2005.

----- 2006. Caspian International Seal Survey (CISS) report to Agip KCO on contracted Caspian seal population studies, 2006. June 2006.



# APPENDIX 1

## **Awareness raising among fishermen and game wardens on the conservation of Caspian Seal in three provinces of Caspian coast in Iran**

Hormoz Asadi and Leili Shamimi

### **Objectives**

- Awareness raising among fishermen and game wardens about the significant decline of seal population and its impacts on Caspian ecosystem in three provinces of Caspian coast (Guilan and Mazandaran and Golestan)
- Establishment a system for rescuing seals caught in pareh nets, examining, sampling and releasing them
- Carrying out a preliminary survey of dead seals along selected areas of coastline
- Establishment of a Seal Centre in Bandar Anzali, Gilan Province. The centre will be acting as the main Iranian centre in Caspian Seal Network in the region.

### **Workshops**

Awareness raising workshops were conducted in Guilan and Mazandaran for fishermen and game wardens. These groups were selected on the basis of the degree of interaction with seals in daily life in Caspian coast. Fishermen are the ones who interact most with the animal due to their lifestyle and livelihood and the game wardens have the responsibility of patrolling the coast and have interaction with fishermen.

### **November 8-10, Guilan**

The first workshop was conducted in Bandar Anzali in Guilan on November 8<sup>th</sup> 2006 in the Department of Fisheries with fishermen. 19 Chairmen of the Pareh Cooperatives in Guilan attended the workshop all acting as the representative of their Cooperative.

The second workshop was conducted with game wardens in Selkeh National Park in Guilan on November 10<sup>th</sup>. 35 game wardens with three officials participated in the workshop among them was the Deputy of the head of the Department of Environment in Guilan



### **Programme**

The workshop with fishermen began with an introduction by the Deputy of the Department of Fisheries in Guilan followed by Dr. Asadi giving a background of the project and explaining the aims of the Darwin Seal Project. The session was followed by a power-point presentation by Dr. Asadi about the Caspian Sea, Caspian Seal ecology, status, present threats, solutions and proposed agreements.

About an hour was allocated to discussion in which fishermen elaborated their problems in general, discussed solutions and agreements. Dr. Asadi and the team answered questions and clarified some ambiguities.

The same programme was carried out with game wardens. First there was a warm welcome and introduction by the Head of the Department of the Environment of Guilan, following by a power-point presentation by Dr. Asadi and discussion on agreements. The wardens were taught to identify the condition of the body and any external injury.

### **Outcomes and agreements**

The workshops were very much well appreciated and participants were interested in the subject and took an active part in the discussion. They all acknowledged the problem very sincerely and related it to the shortage of fish in Caspian Sea which cause such perceived competition.

It was agreed with the Pareh fishermen that they would hold the seals caught in their net instead of killing them in price of IRR 300,000 ( $\approx$  USD 30) for live seal and IRR 50,000 ( $\approx$  USD 5) for dead seal. A fish tank and a hoop net were to be given to each Pareh to minimise the stress before the project acquire the animal. This agreement was announced to Pareh cooperatives by the Department of Fisheries as an official request.

The game wardens agreed to monitor the coast while patrolling the coast for any dead seal in price of IRR 50,000 ( $\approx$  USD 5) for each body. They were to keep the body and inform the team for further operations.



#### **November 15-16, Mazandaran**

A workshop was convened in Mazandaran with experts from DoE and game wardens in Fereidoon Kenar on November 15<sup>th</sup>. 36 people participated in the workshop.

#### **Programme**

The workshop started with the short introduction by the deputy of the Director of the Department of Environment and followed by the presentation by Dr. Asadi on the Caspian Seal project and the threats to the seal population. The solution and agreements were discussed.

Also the same presentation was given to the Director of the Department of Fisheries in Mazandaran, his deputy in charge of fishing operations and his team (six experts) on November 16<sup>th</sup>. The project objective and methodology was explained.

#### **Outcomes and agreements**

The agreement with the game wardens were the same as in Guilan, the difference being that the work in Mazandaran has not been fully started yet (due to initial funding limitations). However, the workshop

was the ground work for more intense activities in the coming year in three regions in Mazandaran Province.<sup>2</sup>

The Director of the Department of Fisheries in Mazandaran and his team were briefed on the project and agreed to support workshops with fishermen in two parts of the coast of Mazandaran and officially informed fishermen about the ongoing seal project.



#### **December 20-23, Golestan Province**

Due to the delay in coordination between Central Department of the Fisheries in Tehran and Provincial Department in Golestan Province, the workshop was postponed until December 20-23.

Two workshops will be conducted for game wardens and Pareh fishermen. At the same time the Ashoora Deh Island will be monitored and future plans for live sampling in the region will be assessed.

#### **Follow up on establishing the Seal Centre**

The procedure of the establishment of a Seal Centre in Bandar Anzali in Guilan was followed up with officials of the Department of Fisheries and the Department of the Environment. The outcome was that

---

<sup>2</sup> Mazandaran province has the longest coast among three Caspian provinces in Iran. For the project to be more effective, the activities should be focused on three different regions.

a memorandum of agreement was prepared between University of Gilan, the Provincial Department of Environment, Provincial Department of Fisheries and Darwin Project. In this MoA the parties agreed to jointly establish a Seal Centre in Gilan and give all the support needed. The letter has been signed by the Head of Department of Fisheries and is remained to be signed by other parties.

The Department of Fisheries of Gilan agreed to provide an office space with needed equipments to the Seal Centre. The Seal team is following up on this issue.

### **Coastal surveying, mid-October to December 2006**

During each visit to the coast one or two days were allocated to the monitoring of coastal transects in Guilan and Mazandaran and Golestan.



### **Guilan Province**

Up to 10 transects were monitored in Guilan and also with the help of fishermen and game wardens as agreed in the workshop, 24 bodies were recovered. Of these, 10 were sufficiently fresh for necropsies to be carried out by Dr. Asadi on two visits (first - 4 bodies, second - 6 bodies) in order to teach the vet and the trainees the necropsy procedure according to the Darwin project protocol. The methods for measurement and weighing were explained by Dr. Asadi and were practiced by the trainees. Also, two game wardens and three fishermen voluntarily helped the team with the work.



### **Results**

Of 24 dead seals, 19 were measured and sexes identified (11 males and 8 females) (Annex 1), 3 were too decomposed for measurements to be taken, therefore only bone samples were taken where appropriate.

Each sample was given a reference number and was labelled accordingly. For each animal a separate post-mortem/live form was filled in and the data was transferred to an excel sheet (Annex 1 and 2). For live animals a different reference number was used to be distinguished from dead recordings. Samples were labelled and stored in the lab of DoE of Guilan. One of the trainees, Mr. Alinejad is in charge of the stock.

Samples were taken from the skin, upper canine and blubber of the ten carcasses necropsied. However, no pathology samples were taken because the internal organs were too decomposed. Also Body measurements (full body length (tip to end of flipper), body length (tip to end of tail), girth, tail, weight) were taken (ANNEX 1a).

Of the 10 seals necropsied, 6 were pregnant females. Embryos were taken out of the wombs, measured (Annex 2) and preserved in 10% buffered formalin.

The causes of death over a one-month period (Nov-Dec 2006) for 11 seals were identified (ANNEX 1b) as follows:

Killed by harpoon: 7

Shot by rifle: 3

Suffocation: 1

Also one live seal was caught in one of Parih nets and were given to the Seal project team without being harmed. It was a young male in very good condition. Fishermen kept him in a fish tank till the team arrived at the site. The animal was tagged and some basic measurements were recorded and a blubber sample was taken. Lesions were investigated. Due to inefficiency of the anaesthetic the animal was released to avoid further harm<sup>3</sup>.

The basic measurements are listed in the following table:

Body length (tip to end of tail)/cm	75
Full body length (tip to end of flipper)/cm	87
Girth/cm	86
Weight/Kg	23
Temperature/c <sup>o</sup>	36.2
Sex	Male



---

<sup>3</sup> Since it was the first experience of live sampling for the veterinarian in charge, before arrival of the team to the site, he used a different combination of tranquilizer with anesthetic (Ketamine+ Acepromazine ) used for pets but had no effect on seals. To avoid drug interaction, the team decided not to try the anesthetic (recommended in the Darwin live-sampling protocol) and after taking measurements, they released the animal.

### **Mazandaran Province**

In the past two months, the coast were monitored twice in two transects in the east of the province. A total of 8 bodies were found, all in a very decomposed conditions, and therefore no measurements were taken.

### **Golestan Province**

In Ashoora deh in Golestan province 3 dead seals were reported by a vet employed by the Provincial Department of Fisheries. No measurement was recorded.

### **Other outcomes**

The team of Seal project were established in Guilan. It consists of three local people, one from DoE in Guilan, one from the University of Lahijan and a veterinarian from the University of Guilan. Terms of References were determined based on the experience and expertise of each individual and were given to trainees.

The trainings have begun from early November. Two sessions rounds of necropsy demonstration and training have been carried out by Dr. Asadi, with the help of trainees with active involvement of some fishermen and game wardens.

The system of work with fishermen and game wardens is that when they find a live/dead seal they call the team and one of the team members in Gilan will go and obtain the body/animal and pay the reward to the finder. For the first three rounds, if the animal was alive or the carcass was fresh, the team from Tehran (Dr. Asadi and Leili Shamimi) will go to the site and demonstrate the formal procedure until the trainees could take the responsibility themselves.



### **Future plans**



- A presentation on Caspian Sea in general and past and present projects on the Caspian Seal will be given to the experts of the Marine Bureau of the Department of Environment in Tehran
- A presentation on Caspian Seal and its current status will be made to experts of the Department of Fisheries in Tehran
- Three workshops will be organised in three regions of Mazandaran for fishermen
- A seminar on Caspian Seal and Methodology for estimating number of pups on ice will be given in the College of Environment.
- There will be follow-up on the consensus with fishermen and game wardens in Guilan province through regular visits.

### **Conclusion**

The issue of incentive seemed to be very persuasive for fishermen and game wardens. Since the workshops one live animal has been rescued and many more dead bodies were found recorded by fishermen and game wardens. The major problem for fishermen is economic. The significant decline in number of fish has consequently affected their livelihood. They have even pleaded with the government to suspend fishing in Caspian Sea for 3 years and to pay compensation.

The current threat to Caspian seal is that the number of illegal fishermen has escalated considerably in the past few months, due to ineffective security system in the Caspian Sea and also because of the suspension of kilka fishing for three months ordered by Department of Fisheries. The seal carcasses found were mostly killed by either a gun or harpoon in a way that even the skull of the embryo in the womb was fractured. The control of illegal fishing is a much more difficult task and different measures should be addressed in tackling this problem. But the constant follow up and education could help resolving the problem to some degree.

|

## ANNEX 1(A) MEASUREMENTS OF DEAD SEALS IN GUILAN SURVEY

<u>Sex</u>	<u>Full body length (cm)</u>	<u>Body length(cm)</u>	<u>Girth(cm)</u>	<u>Tail(cm)</u>	<u>Blubber thickness(cm)</u>	<u>Weight (Kg)</u>
Male	148	130	-	-	5.5	-
Male	109	97	-	-	-	-
Male	-	-	-	-	-	-
Female	136	120	-	-	-	-
Male	97	-	-	-	-	-
Female	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
Male	149	134	105	-	5	-
female (pregnant)	147	138	106	-	7	67
male	161	153	111	9	7.5	71
female (pregnant)	153	140	120	8	8	80
female (pregnant)	150	136	117	9.5	9	83
male	151	135	97	9	5	-
male	131	107	102	-	-	55
female (pregnant)	141	129	104	10	5.5	-
Male	161	149	104	9	-	-
male	131	120	105	10	5	-
female	141	127	-	8	4	-
female	141	122	110	9	6.5	-
male	109	70	-	7	-	30

ANNEX 1(B) CAUSE OF DEATH OF SEALS IN GILAN SURVEY

<u>Sex</u>	<u>Lesion</u>	<u>Cause of Death</u>	<u>Location found</u>	<u>← Sam Formatted Table</u>
<u>Male</u>	<u>holes in the body</u>	<u>probably killed by harpoon</u>	<u>Jafrood, Gilan</u>	-
<u>Male</u>	-	<u>unknown</u>	<u>Bojagh NP, Gilan</u>	-
<u>Male</u>	-	<u>unknown</u>	<u>Bojagh NP, Gilan</u>	-
<u>Female</u>	-	<u>unknown</u>	<u>Ghazian, Gilan</u>	-
<u>Male</u>	-	<u>unknown</u>	<u>Bojagh NP, Gilan</u>	-
<u>Female</u>	-	<u>unknown</u>	<u>Bojagh NP, Gilan</u>	-
-	-	<u>unknown</u>	<u>Sangachin, Gilan</u>	-
-	-	<u>unknown</u>	<u>Sangachin, Gilan</u>	-
<u>Male</u>	<u>none/skull intact</u>	<u>suffocation in net</u>	<u>Bojagh NP, Gilan</u>	<u>skin, upper canine</u>
<u>female (pregnant)</u>	<u>gunshots/skull fractured</u>	<u>killed by gun</u>	<u>Kiashahr, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>male</u>	<u>none</u>	<u>probably suffocation</u>	<u>Kiashahr, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>female (pregnant)</u>	<u>holes in the lower part of body</u>	<u>killed by harpoon</u>	<u>Sangachin, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>female (pregnant)</u>	<u>holes in the lower part of body</u>	<u>killed by harpoon</u>	<u>Bashmal, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>male</u>	<u>none/skull intact</u>	<u>probably suffocation in net</u>	<u>Sangachin, Gilan</u>	-
<u>male</u>	-	<u>unknown</u>	-	<u>skin, upper canine</u>
<u>female (pregnant)</u>	<u>skull intact/gunshots</u>	<u>killed by gun</u>	<u>Sangachin, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>Male</u>	<u>holes in the lower part of body</u>	<u>killed by harpoon</u>	<u>Zibakenar, Gilan</u>	<u>skin, upper canine</u>
<u>male</u>	<u>3 holes in the lower part of body</u>	<u>killed by harpoon</u>	-	<u>skin, upper canine, blubber</u>
<u>female</u>	<u>holes in the body</u>	<u>killed by harpoon</u>	<u>Sangachin, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>female</u>	<u>holes in the body/skull fractured</u>	<u>killed by harpoon</u>	<u>Sangachin, Gilan</u>	<u>skin, upper canine, blubber</u>
<u>male</u>	<u>holes in the lower part of body</u>	<u>killed by harpoon</u>	<u>Sangachin, Gilan</u>	<u>skin, upper canine</u>

## ANNEX 2. MEASUREMENTS OF EMBRYOS IN DEAD SEALS

<u>Reference No.</u>	<u>Sex</u>	<u>Full body length</u>	<u>Body length</u>	<u>Weight (Kg)</u>	<u>Location</u>	<u>Remarks</u>
<u>06 11 10</u>	<u>male</u>	<u>52</u>	<u>46.5</u>	<u>2.3</u>	<u>Kiashahr, Gilan</u>	-
<u>06 11 12</u>	<u>female</u>	<u>64</u>	<u>53</u>	<u>2.5</u>	<u>Sangachin, Gilan</u>	<u>skulls fractured in womb</u>
<u>06 11 13</u>	<u>male</u>	<u>56</u>	<u>51</u>	<u>2.1</u>	<u>Kiashahr, Gilan</u>	<u>skulls fractured in womb</u>
<u>06 12 16</u>	<u>female</u>	<u>53</u>	<u>49</u>	<u>2</u>	<u>Sangachin, Gilan</u>	-
-	-	-	-	-	-	-

## **APPENDIX 2**

### **Preliminary Report**

**Of live and dead seal monitoring in certain islands  
in Kazakh part of Caspian Sea in the fall of 2006**

**Aidyn Kydyrmanov & Kobey Karamendin**

### **Almaty 2006/15 December**

**The aims** of expedition to Kazakhstan part of Caspian Sea were monitoring for the seals quantity and collecting samples for pathology examination.

**Duration** of work: 01 – 13 November 2006.

**Participants:** in Aktau – Aidyn Kydyrmanov, Kobey Karamendin (Institute of Microbiology and virology, Almaty), Nurlykhan Ismailov (field assistant), Khadis Baimaganbetov, (local guide); in Atyrau - Aidyn Kydyrmanov, Kobey Karamendin, Salauat Kaldybaev (participant of Seal Conservation Net as field assistant ), Nurbolat Bisengaliev (local guide).

**Monitoring areas:** in Aktau – Rybachyi, Morskoy and Novyi isles: in Atyrau – Peshnoi kultuk, Zuid-West and Masabay isles.

The expedition started on 02.11.06 in Aktau, where preparation for going to sea began: buying of provision and liquid nitrogen, and requesting border guards' permission. Unfortunately, border guards' permission was not obtained and we went to the sea from Bautino haven 04.11.06 on our own. We travelled north at 9-10 knots speed towards Rybachyi island, which lies 14 miles from Bautino. The weather was clear and sunny (Figure 1).



FIGURE 1.

**Live seal monitoring in Aktau**

Our local guides informed us that they had seen about 250-300 seals on Rybachyi island on 15-16<sup>th</sup> October 2006. On the base of this report we outlined to include this island in our sites to be monitored. On 04<sup>th</sup> of Nov 2006 en route to the islands we saw 2 seals on the water not far from Bautino and 6 other individuals during our journey.

We reached Rybachyi isle in 1,5 hours in N44°47' E050°21', where we found a haul-out site with 9 seals. One of them is seen on Figure 2.



FIGURE 2.

Table 1 – Live seal monitoring between Bautino and Rybachyi island

<i>Date</i>	Localisation	Coordinates		Live seals	Dead seals
		N	E		
04.11.06	Bautino	44°33'	050°15'	2	0
04.11.06	Tyub-Karagan Bay	44°33'	050°17'	6	0
04.11.06	Rybachyi	44°47'	050°21'	9	0
04.11.06	Ship course	44°44'-46'	050°21'	0	1
07.11.06	Return way	44°55'	050°18'-38'	10	0

We went ashore on Rybachyi island and our field assistant Nurlykhan Ismailov managed to catch that seal using hoop net. (Figure 3).



FIGURE 3.

Visual inspection revealed that the seal was a juvenile female with a deep flesh wound (healed) about 8 cm in diameter on the back, probably the result of a wolf bite. We saw wolf tracks and a resting hole near the haul out (Figure 4). However, the young seal appeared to be healthy.



FIGURE 4.

We weighed the young seal with a spring balance (which measures up to 100 kg; Figure 5) in order to administer the correct drug dosage. The seal weighed 13 kgs, and was administered intravenously 0.4 ml 5% solution of ketamin hydrochloride (in a dose of 1,5 mg per kg bodyweight) into the extradural intravertebral vein. After quick tranquilization we sampled blood for serology with “vacutainer” kits and all available samples from body orifices for virology (nasal, ocular, tonsils swabs) and got morphometric data (Figures 6 & 7). As we did not have a tool for blubber sampling, a blubber biopsy was not taken. The seal regained consciousness 8 min after anaesthesia and tried to bite our colleagues standing nearby!





FIGURE 5.

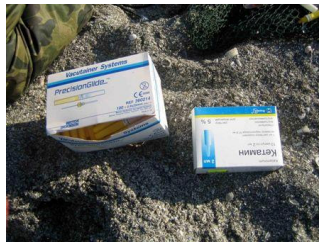


FIGURE 6.



FIGURE 7.

Finally, the seal was set free! (Figure 8).



FIGURE 8.

Local fishermen informed us that the quantity of seals appears to be increasing in some places (such as Rybachi Island) where they were absent 5-6 years ago.

We therefore wanted to stay overnight and try to catch more seals for sampling, but we were advised against this because of the danger from wolves and also from the sea washing over the island in stormy conditions. We therefore continued our trip towards Morskoy and Novy islands.

En route to these islands we came across a very fresh dead seal caught in a fishermen's net for sturgeon. We took the seal from the net and carried out a necropsy on the boat. The morphometric data were: length 96 cm, total length 109 cm, female, girth 63 cm, weight 20 kg, blubber thickness 4 cm, age about 10 months old. All samples for pathology research were taken (Figure 9).



FIGURE 9.

No seals were found on Morskoy and Novyi islands or in surrounding waters. Because of stormy weather we unfortunately wasted 1 day. During our return journey we saw 10 seals. We returned to Bautino on 7<sup>th</sup> November.

On 8-9<sup>th</sup> November we started preparations for the next stage of our work, to take place on the Peshnoi peninsula and Ural estuary area. This time we were successful in obtaining the border guards' permission. The results of our findings on seals are given in table 2.

Table 2 – Live seal monitoring in the Ural estuary area

Date	Place	Coordinates		Live seals	Dead seals
		N	E		
09.11.06	Levyi Koltuk	46°52'	0,51°38'	8	0

10.11.06	Masabay koltuk	46°52'	0,51°42'	6	0
	Masabay isle	46°44'	0,51°45'	1	0
	Zuid-West isle	46°45'	0,51°39'	1	2
11.11.06	Zuid-West isle	46°45'	0,51°39'	5	0

All seen seals were floating on the water; no seals observed on haul-out sites. We found 2 dead seals on the coastal line partially covered with shelly sands (Figures 10, 11).



FIGURE 10



FIGURE 11

On visual inspection of one seal carcass, a ripped wound was found on the hind flipper and caudal area (Figure 12). The soft tissues of the head were completely pecked by carrion/hooded crows and herring gulls. We theorized that the seal had been accidentally wounded by a boat propeller and probably bled to death. The carcass of the second seal was no longer intact, the intestines having been pulled out of from holes in the body by birds (Figure 11).



FIGURE 12.

Dead seals were necropsied according to Paul Jepson's protocols on South-West isle. (Figure 13).



FIGURE 13.

All necessary organs for pathology examinations were taken: liver, lungs, spleen, brain, intestine and teeth.

The morphometric data from first seal were: length 136 cm, total length 153 cm, male, girth 111 cm, weight 65 kg, blubber thickness 8 cm. The morphometric data from second seal were: length 132 cm, total length 149 cm, male, girth 101 cm, weight 50 kg, blubber thickness 5,5 cm. All samples for pathology research and otoliths (Figures 14, 15) were taken for further examination.

The laboratory investigations (virology, serology) of samples are in a process.



FIGURES 14



FIGURE 15

**Preliminary conclusion.** Our first expedition to Caspian may be considered to be a success. We noted places for seal monitoring in future, and took samples for pathology examinations from live and dead seals. Furthermore, we have formed a permanent Kazakh seals investigating team from enthusiastic people who are prepared to devote their minds and power to Caspian seal welfare.

**Table 3 - Characteristics of collected samples from seals**

№	Date	Location found			Condition code		Samples	Sex	Basic morphometrics					Faeces
		Place	N	E					Length, cm		Girth, cm	Weight, kg	Blubber, mm	
									L1	L2				
1	04.11.06	Rybachie	44°47'	050°21'	Live	1	Nasal and oral swabs, serum	♀	84	95	64	13	-	-
2	04.11.06	Rybachie	44°47'	050°21'	Dead	2a	Nasal and oral swabs, liver, lungs, spleen, brain, intestine, kidney and superior canine tooth.	♀	96	109	63	20	40	+
3	10.11.06	Zuid-West isle	46°45'	0,51°39'	Dead	2b	Liver, lungs, spleen, brain, intestine, kidney and superior canine tooth.	♂	136	153	111	65	80	+
4	10.11.06	Zuid-West isle	46°45'	0,51°39'	Dead	3	Liver, lungs, spleen, brain, intestine, kidney and superior canine tooth.	♂	132	149	101	50	55	-

Notes:

L1-length from tip of nose to end of tail (both in a straight line);

L2-length from tip of nose to tip of hind flipper.