

DETAILED DESCRIPTION OF THE RESIDENCY TRAINING PROGRAMME

(If this description accompanies an application for re-approval of an existing programme please highlight the differences with the formerly approved version including last approved changes)

1. RESIDENCY PROGRAMME IN AQUATIC ANIMAL HEALTH

How and where is/will be the detailed description of residency programme available to the public?

A detailed description of the residency programme will be published on the website of the FDU at <http://www.tiho-hannover.de/kliniken-institute/fachgebiete/abteilung-fischkrankheiten-und-fischhaltung/>. Additionally the description will be published on the website of the ECAAH.

1.1. OBJECTIVES OF THE AQUATIC ANIMAL HEALTH RESIDENCY TRAINING PROGRAMME.

The objectives of the residency training programme are improvement of knowledge and skills of veterinarians responsible for the examinations of fish and related aquatic animals, like crayfish and mussels. The number of specialized veterinarians in the field is very limited and the medical care of aquatic animals is in some regions of Europe and also in parts of Germany very limited. For diagnosing and treating diseases of aquatic animals specialized veterinarians need to gain knowledge on the etiology of diseases, epidemiological connections and environmental conditions related to diseases. Furthermore the residents need to be trained on diagnosis of infectious and non-infectious diseases, disease prevention methods, treatments (medical and others) as well as animal welfare. Impacts of diseases on food quality and diseases that are related to public health have to be part of the residency programme as well. Special knowledge on notifiable disease and disease control programmes including national and international legislation regarding this topic and further fish related topics are also essential. AAH specialists also should also gain knowledge on related topics such as fish nutrition, husbandry techniques and genetics of reared fish species.

1.2. DURATION

Specify. Is the beginning and effective duration of the Residency limited to a specific time frame? (E.g. related to later exam participation?) or flexible?

The duration of the Residency will fulfill ECAAH Policies and Procedures. After an internship of one year that should be conducted at the FDU or any other institution dealing with diseases of aquatic animals, the Residency programme can be started. The start of the programme is flexible. The programme will last for 3 years and the exam should be taken afterwards.

1.3. DIPLOMATES PARTICIPATING

a. Number and Names of active Diplomates actually presents at the site and participating in the programme. State if supervisors are assigned to particular residents

b. Estimation of % time (100% => +/- 40h/week, 45 weeks/y) of clinical activity of each of these Diplomates.

c. Estimation of time (in h/week) dedicated for input to Resident training other than clinical supervision by each of these Diplomates.

#	Name	Diploma	Research Specialization	b.	c.
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1.	Verena Jung-Schroers	Veterinarian, Dr. med. vet., Approved veterinary specialist for fish diseases (by the Veterinary Chamber of Lower Saxony), certification for advanced training in the fields of fish diseases (by the Veterinary Chamber of Lower Saxony)Diplomate ECAAH	Microbiology, Virology, Parasitology, Pathology of fish, Treatment of fish and other aquatic animals, therapy, Animal Welfare	60%	5%
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d. Number of Residents (standard / alternative) effective / foreseen in the next five year period.

Two residents are foreseen in the next five year period.

1.4 SUPPORTING NON DIPLOMATE EXPERTISE

Specify number and expertise level of non Diplomate staff with >5 years full time AAH experience providing additional support to Residents in training (veterinarians, Certificate / MSc in Aquatic species, Technicians)

- Dr. rer. nat. Dieter Steinhagen, apl. Prof., working at FDU since 1984, Head of FDU since 2005, Diplome biologist
- Dr. ing. agrar. Mikolaj Adamek, biologist, working at FDU since 2009
- Birgit Luckhardt, technical assistant at FDU since 1981

**1.5. FOR STANDARD APPROVED CENTRE: SPECIFIC PROGRAMME DESCRIPTION
(FOR SATELLITE TRAINING CENTRES, PLEASE GO DIRECTLY TO POINT 3.)**

BASED ON:

52 weeks/yr. and 60% of the time spent practicing specialty (clinical work, sampling, diagnosis, lab tests, training in lab, rotations and basic training, treatment, follow ups, writing up cases logs), 40% other duties (research, CPD, teaching off clinics - preparation of lectures etc.)

1.5.1. Schedule for the Resident demonstrating how requirements of the Residency will be met during the residency (SEE ECAAH POLICIES AND PROCEDURES).

This schedule should be in terms of weeks/year (which may vary between years) and should demonstrate the *number of weeks* each year that the Resident is expected to spend in:

(i) Aquatics clinical service.

Work at the clinical service of FDU: number of weeks / year: see table 1

The resident will be involved in the routine clinical service of the FDU. The FDU is offering consulting hours 5 days per week. The resident will deal with own cases / clients (always with supervision from the Diplomate). In the clinical service the resident will deal with different cases concerning fish diseases, e.g. parasitology, bacteriology, virology, anesthesia, pharmacology, radiology, pathology, management of fish / aquatic animal farms, advanced fish production technology / husbandry, public health, food hygiene and epidemiology. The resident has to perform all examinations (sampling, ultrasound, x-ray, blood analysis...) necessary for the diagnosis the specific case. Also the resident will gather knowledge on treatment (prophylaxis, therapeutics, surgery, wound care...). The FDU offers hospital care for ornamental fish. The resident will be involved in supervision and treatment of these fish as well.

(ii) Specify planned Rotations (weeks, discipline) in other related clinical disciplines.

Work in different diagnostic labs of FDU: number of weeks / year: see table 1

The FDU has different labs for diagnostic services as well as for samples from research projects. The resident will rotate through these labs and will be working (with supervision by a Diplomate) in the bacteriology lab, the virology lab, the cell culture lab, the molecular biology lab and in the histopathology lab (see table 1). Parts of the work in pathology / histopathology will be conducted together with the Institute for Pathology of TiHo (Prof. Dr. Baumgärtner, Dr. Wohlsein, both EBVS® European Specialists in Veterinary Pathology (ECVP)). Additionally the resident will be trained in genetics and immunology.

The resident will also visit other institutes that are contributing to the residency programme and that are registered as satellite centres of ECAAH. It is planned to arrange visits and working programmes with the Chair for Fish Diseases and Fisheries Biology, Faculty of Veterinary Medicine at Ludwig-Maximilians University Munich, Germany (supervising Diplomate: Prof. Dr. Dušan Palić), the Federal Research Institute for Animal Health (FLI), Germany (supervising Diplomate: Dr. Uwe Fischer) and the Institute for Terrestrial and Aquatic Wildlife (ITAW), University of Veterinary Medicine Hannover (TiHo), Germany (supervising Diplomate: Prof. Dr. Ursula Siebert). Additional satellite centres can be involved as well in the programme.

At the Chair for Fish Diseases and Fisheries Biology, Faculty of Veterinary Medicine, Ludwig-Maximilians-University Munich the residents will be trained in clinical cases focused on: 1) laboratory aquatic animal veterinary medicine (fish colony medicine, as well as clinical studies in finfish, including disease challenges and safety and efficacy studies of drugs and supplement treatments); 2) aquatic veterinary biosecurity and disease control and prevention. Special attention will be given to freshwater fish of importance to Bavarian

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aquaculture through collaboration with Starnberg Institute for Fisheries and Aquaculture and with Bavarian Fish Health Services.

At the Institute of Infectology (IMED), Federal Research Institute for Animal Health (FLI) the residents will be trained in the diagnosis of notifiable and emerging diseases and in epidemiological methods.

At the Institute for Terrestrial and Aquatic Wildlife Research (ITAW), University of Veterinary Medicine Hannover (TiHo) the residents will be trained in disease of other aquatic animals (not fish) including parasite life-cycle studies and will be involved in current projects. The resident will also be involved in investigations on effect of anthropogenic activities on the health and behavior of marine fishes such as chemical pollutants, marine litter, and noise pollution.

(iii) **Specify planned External clinical rotations** (weeks, location), especially but not exclusively address training visits to Zoo's, Aquariums, fish farms and Lab animal research facilities.

Visits of farms, other aquaculture facilities, retailer's facilities, public aquaria, research facilities: number of weeks / year: see table 1

The FDU has care contracts with several aquaculture facilities, retailers and public aquaria. The resident will visit all these institutions and additionally also other aquaculture farms, retailers and research facilities. Training will be on management of fish / aquatic animal farms, advanced fish production and husbandry.

(iv) **Research** – time in which the Resident will perform and write- up the research project(s) for publication.

Working in an own, clinically orientated project about aquatic animal health: number of weeks / year: see table 1

The resident will be responsible for an own project about aquatic animal health. He will plan possible experiments, perform these experiments and will evaluate the data and write publications. Additionally the resident will be responsible for the health of all fish in the project and will care for these animals.

(v) **Other 'off clinics' time** – for study and for production of 2nd publication and/or for case reports.

Visits of conferences, preparation of presentations, production of 2nd publications / case reports, giving lectures / teaching: number of weeks / year: see table 1

The resident will visit several conferences per year. It is planned that the resident will give oral presentations on special clinical cases or on the results from the research projects he is involved in at these conferences (see table 1). Epidemiology of fish diseases should be taught by colleges from the Lower Saxony State Office for Consumer Production and Food Safety (LAVES, responsible person: Dr. Dirk Willem Kleingeld) and an epidemiological course, that the resident can attend, is offered once per year by the Institute for Biometry, Epidemiology and Information Processing (IBEI), University of Veterinary Medicine Hannover (TiHo) (Dr. Amely Campe, EBVS[®] European Specialist in Veterinary Public Health (ECVPH)).

Additionally the resident will be involved in teaching at FDU (see below; 1.5.2).

(vi) **Vacation time.**

Vacation: 6 weeks per year (see table 1)

In Germany the staff at the University has 30 days of vacation per year. As in other European countries the vacation time per year is shorter, the time of the residency will be prolonged in total to 3 full years and additional 9 weeks in the fourth year.

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Table 1: RESIDENCY ACTIVITIES (time is given in weeks)	Residency			
	Year 1	Year 2	Year 3	Year 4
Clinical training in aquatic animal health				
Work in industry				
• Herd / Flock care in aquaculture facilities	3	3	3	0.5
• Herd / Flock care in retailers facilities	2	2	2	0.5
Work in public aquaria industries				
• Herd / Flock care in public aquaria	2	2	2	0.5
Work in the clinic of FDU (examination of fish from private owners, fish farmers, retailers, public aquaria and from research projects)				
• General examination of fish, treatment, sampling	4	3	3	1
• Parasitology	3	3	3	1
• Bacteriology	3	2.5	3	0.5
• Virology	2	2.5	1	0.5
• Molecular biology	2	3	1.5	0.25
• Pathology	2.5	2.5	3.5	0.5
• Histopathology	0.5	0.5	2	0.25
• Anaesthesia	0.5	0.5	0.5	0.25
• Genetics	0.5	0.5	0.5	0.25
• Immunology	0.5	0.5	0.5	0.25
• Ultrasound / Radiology	0.5	0.5	1	0.25
• Surgery	0.5	1	0.5	0.5
• Water examinations (chemical and microbiological)	1	0.5	0.5	0.5
Work at Diagnostic of notifiable diseases of aquatic animals				
• at a satellite centre, planned: Institute of Infectology (IMED), Federal Research Institute for Animal Health (FLI)	2	2	2	0
Work at Diagnostic of diseases of other aquatic animals (e.g. mussels / bivalves)				

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<ul style="list-style-type: none"> at a satellite centre, planned: Institute for Terrestrial and Aquatic Wildlife Research (ITAW), University of Veterinary Medicine Hannover (TiHo) 	1.5	1.5	1.5	0
Work at Aquatic veterinary biosecurity and disease control and prevention				
<ul style="list-style-type: none"> at a satellite centre, planned: Chair for Fish Diseases and Fisheries Biology, Faculty of Veterinary Medicine, Ludwig-Maximilians-University Munich 	2	2	2	0
Research related to aquatic animal health				
Work in a research project (e.g. epidemiology, pathology, management of fish / aquatic animal farms, advanced fish production technology / husbandry)				
<ul style="list-style-type: none"> Planning of experiments 	2.5	0.5	0	0
<ul style="list-style-type: none"> Performance of experiments 	2.5	3	2	0
<ul style="list-style-type: none"> Evaluation of results 	1	2.5	4	0.5
Independent study or practice, lectures, lab teaching				
Independent study <ul style="list-style-type: none"> Epidemiology fish diseases (LAVES) 	2	1	1	0
Lectures / Teaching (including preparation)	2	2	2	0
Conferences (including preparation)	3	4	4	0
Vacation	6	6	6	1
TOTAL	52	52	52	9

1.5.2. Teaching responsibilities of the Resident (in relation to aquatics).

Specify the audience, the nature (hands-on, seminar, frontal lecturing) and the estimated time spent with these activities pro residency year

- Help in teaching labs (hand-on) and lecturing veterinary medicine students (hand-on, seminars and frontal lecturing) (1.5 hour/week)
- Seminars for PhD students (1 hour/ month)

1.5.3. Continuing Professional Development CPD.

- Internal training for residents and veterinarians in further training for certified specialists in fish diseases (case presentations, seminars on different topics related to Aquatic Animal Health): 2 hours/week
- Internal training for all research associates at FDU (presentation of research results): 1 hour/week

(ii) **Internal CPD in other areas – clinical and research.** Include any CPD organized for residents in all areas (e.g., statistics courses). Indicate frequency of such meetings and the input (e.g. presenting) expected from the Resident.

- Presence in statistics courses of the University (1 week, independent processing of numerous cases under supervision)

(iii) **External CPD and conferences, including body meetings with their associated training days.** Again indicate the expected attendance of the Resident, and indicate at what stage of their training they will be expected to present to such a meeting.

- Attending of min. 2 national congresses and 2 international congresses within three years
- Attending of meetings of the EAFP on ornamental fish diseases (1-2/year)
- Attending of meetings of all specialized veterinarians in Germany dealing with diseases of fish for human consumption (1/year)
- Attending an Epidemiological course offered by the Institute for Biometry, Epidemiology and Information Processing (IBEI), University of Veterinary Medicine Hannover (TiHo) (Dr. Amely Campe, EBVS® European Specialist in Veterinary Public Health (ECVPH)

(iv) **Specify if it is compulsory for residents to enroll in specific discipline related discussion lists, cpd providing websites**

It is not compulsory for the resident residents to enroll in specific discipline related discussion lists or cpd providing websites.

1.5.4. **Aquatic health case records and records:** an example of the case-record (or records) which the Resident will use and will present for acceptance of credentials must obligatory accompany this application (at least as pdf document). If a form of supporting electronic case recording is contemplated (full electronic recording will not suffice) provide a detailed description and printed examples

- See attached (Appendixes 1-3)

1.5.5. Any other course work. State what other 'course work' is expected of the Resident. In particular state if the **Resident is also registered for a higher degree, (e.g. .Masters,)** and if so, explain what requirements further to those already part of the Residency this will entail and how these may affect clinical training.

The resident can be registered for a PhD or a doctoral thesis (Dr. med. vet.). If the resident is registered for a PhD or doctoral thesis, research work (thesis) will be part of the total research time of the residency programme. Papers in peer reviewed journals produced from the thesis can count towards the requirements for the residency.

1.5.6. Provision to compensate for deficiencies in the programme - e.g. lack of certain species – see facilities below). Demonstrate how these deficiencies are to be met (e.g. external rotations).

Clinical work and further training on bivalves and other aquatic animals (excluding fish) will be provided by Prof. Dr. Ursula Siebert, Dipl. ECAAH and Dipl. ECZM, Institute for Terrestrial and Aquatic Wildlife (ITAW), University of Veterinary Medicine Hannover (TiHo), Germany, or a specialist centre abroad.

1.5.7. Evaluation of Resident's performance. Describe the system used for assessment of the Resident's progress and performance; how often it is performed and by whom. The resident will be evaluated by means of mock exams that will be conducted once in the first and the second year and twice in the third year of residency. The questions of the mock exams will be related to the activities carried out during the year of residency (including species specific questions as well as general questions on aquatic animal health). The questions will be updated yearly by the supervisor according to the most significant new publications on aquatic animal health. The corrections of the mock exams will be made by the supervisor and the Diplomates from the involved satellite centres.

2. FOR STANDARD APPROVED CENTRE: OTHER SPECIFIC or ADMINISTRATIVE ASPECTS (FOR SATELLITE TRAINING CENTRES, PLEASE GO DIRECTLY TO POINT 3.)

All administrative work will be covered by the secretariat of the Vet School and our laboratory staff.

3. FACILITIES, SERVICES AND EQUIPMENT OF THE TRAINING CENTRE (FOR STANDARD APPROVED AND FOR SATELLITE TRAINING CENTRES)

3.1 Are the following *minimal* requirements met?

Medical library: a library containing recent textbooks and current journals relating to veterinary and medical anaesthesia and its supporting disciplines must be accessible to the programme participants; there must be full access to internet: Y N

Medical records: a complete medical record must be maintained for each individual case and those records must be retrievable. Y N

Radiographic services: separate rooms and appropriate equipment for comprehensive diagnostic imaging must be available: Y N

A clinical pathology laboratory for hematological and clinical chemistry, Clinical pathology reports must be retained and retrievable: X Y N

3.2 Details concerning the facilities, services and equipment:

3.2.1 **Buildings** – i.e. numbers of operating theatres/consulting rooms / examination facilities/housing for aquatic animals, experimental facilities. Full descriptions are not required.

FDU:

- 2 consulting rooms, one of these rooms can also be used as operating theatre; parasitological examinations are done in one of the consulting rooms

- examination facilities:
 - water lab
 - bacteria lab
 - virus lab
 - lab for molecular biology (PCR, RT-PCR, DGGE)
 - cell culture lab
 - histology lab

- housing for aquatic animals:
 - one room for diseased fish from clients with tanks and aquaria of different sizes and all with separate filter units and heating possibilities
 - 5 separate rooms for aquatic animals used in experimental studies with tanks and aquaria of different sizes and all with separate filter units and heating possibilities
 - 3 rooms for keeping of specific pathogen free carp; one of these rooms with diverse separate keeping tanks and two rooms with one recirculating aquaculture system in each room

TiHo:

At the TiHo nearly every examination of animals is possible. There are facilities for taking x-rays, performing CTs and MRTs, diverse options for laboratory examinations like blood analyses, cell sorting (FACS), laser scanning microscope, transmission and scanning electron microscopy, MALDI-TOF MS, biochemical analysis including gas chromatography and HPLC, cell cultivation and high throughput gene sequencing facilities.

3.2.2 **Overall Case-load.** – Overall approximate annual case-load admitted to the hospital in each species.

At the FDU around 1350 cases / examinations per year are conducted.

Examinations were conducted for diagnostic reasons on the following species in the **last 5 years (1/2013-10/2017)**:

	No.
Vertebrata	
Fishes	
Chondrichthyes (Elasmobranchier)	
Seawater	

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Bamboo Sharks	<i>Chiloscyllium spp.</i>	33
Blacktip reef shark	<i>Carcharhinus melanopterus</i>	30
Blue-spotted rays	<i>Taeniura lymma</i>	2
Cat sharks	<i>Scyliorhinidae</i>	4
Common eagle rays	<i>Myliobatis aquila</i>	8
Cownose rays	<i>Rhinoptera spp.</i>	3
Guitarfishes	<i>Rhinopristiformes, (Glaucostegus halavi and others)</i>	13
Sawfish	<i>Pristis spp.</i>	1
Thornback rays	<i>Raja clavata</i>	1
Zebra shark	<i>Stegostoma fasciatum</i>	15
Freshwater		
Freshwater stingray	<i>Potamotrygon spp.</i>	44
Osteichthyes		
Seawater		
Angelfish	<i>Pomacanthidae</i>	4
Archerfish	<i>Toxotes jaculatrix</i>	2
Batfish	<i>Platax</i>	3
Blowfish	<i>Tetraodontidae</i>	15
Butterflyfish	<i>Chaetodontida</i>	6
Butterflyfish	<i>Chelmon rostratus</i>	3
Clouded morray	<i>Echidna nebulosa</i>	3
Clownfish	<i>Amphiprion ocellaris</i>	10
Cod	<i>Gadidae</i>	3
Comber	<i>Serranus cabrilla</i>	1
Damselfish	<i>Cbrysiptera spp.</i>	1
Dory	<i>Zeus faber</i>	5
File Fish	<i>Monacanthidae</i>	2
Flagtail Characin	<i>Semaprochilodus taeniurus</i>	6
Flounder	<i>Platichthys flesus</i>	4
Four-eyed fish	<i>Anableps</i>	10
Golden Trevally	<i>Gnathanodon speciosus</i>	1
Ground ginger mackerel	<i>Selene vomer</i>	6
Hogfish	<i>Lachnolaimus maximus</i>	4
Hybrid striped bass	<i>M. chrysops x M. saxatilis</i>	3
Lionfish	<i>Pteroinae</i>	18
Longhorn Cowfish	<i>Lactoria cornuta</i>	1
Lumpfish	<i>Cyclopterus lumpus</i>	28
Moorish Idol	<i>Zanclus cornutus</i>	4
Moray	<i>Muraenidae (e.g. Echidna nebulosa)</i>	5
Moronidae	<i>Sea bass</i>	13

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Mullet	<i>Mugilidae</i>	17
Pajama cardinalfish	<i>Sphaeramia nematoptera</i>	3
Parrotfish	<i>Scarinae</i>	4
Pollack	<i>Pollachius pollachius</i>	1
Sailfin molly	<i>Poecilia velifera</i>	3
Sailfin snapper	<i>Symphoricichthys spirulus</i>	1
Scatophagidae	<i>Scathophagus argus</i>	1
Sea needles	<i>Syngnathidae</i>	3
Seahorses	<i>Hippocampus abdominalis, Hippocampus hippocampus</i>	23
Seawolf	<i>Anarhichadidae</i>	14
Silver moony	<i>Monodactylus argenteus</i>	4
Smelts	<i>Osmerus eperlanus</i>	1
Sole	<i>Solea solea</i>	4
Splendid garden eel	<i>Gorgasia preclara</i>	2
Sprats	<i>Sprattus</i>	9
Starry Flounder	<i>Platichthys stellatus</i>	4
Stickleback	<i>Gasterosteidae</i>	4
Surgeonfish	<i>Acanthuridae</i>	7
Tilapia	<i>Oreochromis sp.</i>	62
Triggerfish	<i>Balistidae</i>	3
Turbot	<i>Scophthalmus maximus</i>	28
Whitefish	<i>Coregonus maraena</i>	5
Wrasse	<i>Labridae</i>	3
Other marine fish species		164
Freshwater		
Eel	<i>Anguilla anguilla</i>	102
African catfish	<i>Clarias gariepinus</i>	6
Amazon leaf-fish	<i>Monocirrhus polyacanthus</i>	3
Banded panchax	<i>Epiplatys annulatus</i>	3
Barbel	<i>Barbus barbus</i>	5
Bichir	<i>Polypteridae</i>	1
Bighead carp	<i>Hypophthalmichthys nobilis</i>	5
Bitterling	<i>Rhodeus amarus</i>	16
Bluegills	<i>Centrarchidae</i>	4
Brown trout	<i>Salmo trutta fario</i>	67
Carp	<i>Cyprinus carpio</i>	541
Catfish	<i>Ancistrus sp.</i>	25
Celestial pearl danio	<i>Danio margaritatus</i>	1
Char	<i>Salvelinus spp.</i>	93

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Cichlids (Lake Malawi)	<i>e.g. Pseudotropheus spp., Ontognathus spp., Labidochromis spp., Aulonocara spp.</i>	33
Cichlids (Lake Tanganyika)	<i>e.g. Cyprichromis spp., Cyphotilapia spp., Benthochromis spp., Eretmodus spp., Gnathochromis spp., Petrochromis spp., Tropheus spp.</i>	56
Cichlids (other)	<i>diverse specie, e.g. Astatotilapia, Cichlasoma (Flowerhorn)</i>	41
Cichlids (South America)	<i>e.g. Crenicichla spp., Teleocichla centrarchus, Gymnogeophagus spp., Apistogramma cacatuoides, Cichla spp., Mikrogeophagus ramirezi, Symphysodon, Pterophyllum spp.</i>	228
Coolie loaches	<i>Pangio kuhli</i>	2
Cory	<i>Callichthyidae (Corydoras)</i>	4
Crucian carp	<i>Carassius carassius</i>	7
Danio	<i>Danioninae</i>	3
Emperor tetra	<i>Nematobrycon palmeri</i>	1
European catfish	<i>Silurus glanis</i>	4
Freshwater hatchetfish	<i>Gasteropelecidae</i>	3
Gobies	<i>Gobiidae</i>	2
Golden trout	<i>Oncorhynchus aguabonita</i>	9
Goldfish	<i>Carassius gibelio forma auratus</i>	644
Grass carp	<i>Ctenopharyngodon idella</i>	31
Gudgeon	<i>Gobio gobio</i>	6
Guppy	<i>Poecilia reticulata</i>	30
Heterandria formosa	<i>Heterandria formosa</i>	5
Honey gourami	<i>Trichogaster chuna</i>	1
Huchen	<i>Hucho hucho</i>	6
Kangal fish	<i>Garra rufa</i>	10
Killifish	<i>Cyprinodontiformes, e.g. Pachypanchax varatraza</i>	4
Knife fish	<i>Notopteridae</i>	1

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Koi	<i>Cyprinus carpio koi</i>	239
		4
Lemon tetra	<i>Hyphessobrycon pulchripinnis</i>	3
Minnows	<i>Phoxinus phoxinus</i>	3
Nase	<i>Chondrostoma nasus</i>	16
Neon tetra	<i>Paracheirodon innesi</i>	16
Orfe	<i>Leuciscus idus</i>	54
Pennant carp	<i>Myxocyprinus asiaticus</i>	17
Perch	<i>Perca fluviatilis</i>	9
Pike	<i>Esox lucius</i>	10
Pike perch	<i>Sander lucioperca</i>	145
Piranha	<i>Serrasalminidae</i>	1
Platy	<i>Xiphophorus maculatus</i>	41
Rainbow trout	<i>Oncorhynchus mykiss</i>	703
Rainbowfish	<i>Melanotaeniidae</i>	3
Red-Blue Colombian	<i>Hyphessobrycon columbianus</i>	1
Roach	<i>Rutilus rutilus</i>	5
Rudd	<i>Scardinius erythrophthalmus</i>	28
Rumble fish	<i>Betta splendens</i>	3
Salmon	<i>Salmo salar</i>	23
Silver carp	<i>Hypophthalmichthys molitrix</i>	1
Snakehead	<i>Channidae, e.g. Channa barca</i>	5
Splitfins	<i>Goodeidae</i>	5
Sturgeons	<i>Acipenseridae, e.g. Acipenser baeri, Acipenser gueldenstaedtii, Acipenser stellatus; Huso huso</i>	171
Sucking loach	<i>Gyrinocheilus aymonieri</i> var. gold	1
Swordtail	<i>Xiphophorus hellerii</i>	7
Tench	<i>Tinca tinca</i>	44
Tetras (other)	<i>Characiformes</i>	23
Tiger trout	<i>Salmo trutta fario x Salvelinus fontinalis</i>	5
Trunk fish	<i>Gnathonemus petersii</i>	2
Walking catfish	<i>Clarias batrachus</i>	1
Whiptailed loricaria	<i>Rineloricaria fallax</i>	1
Zebra fish	<i>Danio rerio</i>	55
Other freshwater fish species		18

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Amphibians			
	Axolotl	<i>Ambystoma mexicanum</i>	5
	Poison dart frog	<i>Dendrobatidae</i>	12
	Yellow-bellied toads	<i>Bombina variegata</i>	8
Reptiles			
	Asian Water Monitor	<i>Varanus salvator</i>	2
	Black and white teju	<i>Salvator merianae</i>	1
	Chameleons	<i>Chamaeleonidae</i>	4
	Chinese soft turtle	<i>Pelodiscus sinensis</i>	2
	European pond turtle	<i>Emys orbicularis</i>	24
	Footed tortoise	<i>Chelonoidis carbonarius</i>	12
	Green sea turtle	<i>Chelonia mydas</i>	22
	Hawksbill turtle	<i>Eretmochelys imbricata</i>	2
	Hump turtle	<i>Graptemys</i>	3
	Rail turtle	<i>Podocnemis</i>	8
	Red eared slider	<i>Trachemys scripta elegans</i>	2
	Snake neck turtle	<i>Chelodina longicollis</i>	2
	Southern painted turtle	<i>Chrysemys picta</i>	2
	Water dragons	<i>Physignathus cocincinus</i>	4
	Yellow-bellied turtle	<i>Trachemys scripta scripta</i>	1
Arthropoda			
Crayfish			
	American crayfish	<i>Orconectes limosus</i>	2
	Blue crayfish	<i>Procambarus alleni</i>	1
	Crayfish (others)		32
	European crayfish	<i>Astacus astacus</i>	4
	European lobster	<i>Homarus gammarus</i>	1
	Orange tip crayfish	<i>Cherax snowden</i>	5
	Ornamental prawns	<i>Neocaridina spp., Caridina spp.</i>	38
	Pacific white shrimp	<i>Litopenaeus vannamei</i>	13
	Red swamp crawfish	<i>Procambarus clarkii</i>	2
	Signal crayfish	<i>Pacifastacus leniusculus</i>	8
	Yabbie crayfish	<i>Cherax destructor</i>	1
Mollusca			
Cephalopoda			
	Common octopus	<i>Octopus vulgaris</i>	12
	Nautilus	<i>Nautilidae</i>	8
	Giant pacific octopus	<i>Enteroctopus dofleini</i>	1
Bivalves			
	European flat oyster	<i>Ostrea edulis</i>	51
Echinodermata			
	Holothuroidea		3
	Asteroidea		15

