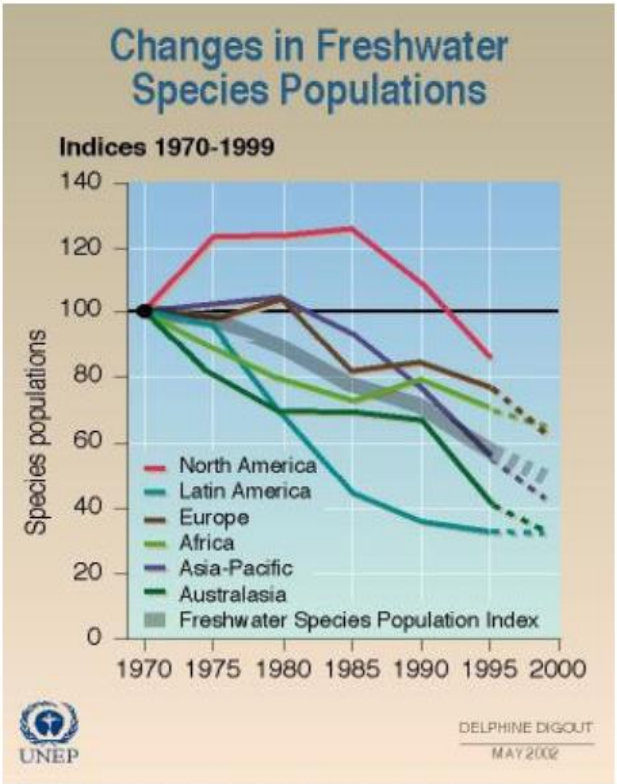
Freshwater Species Population Index:

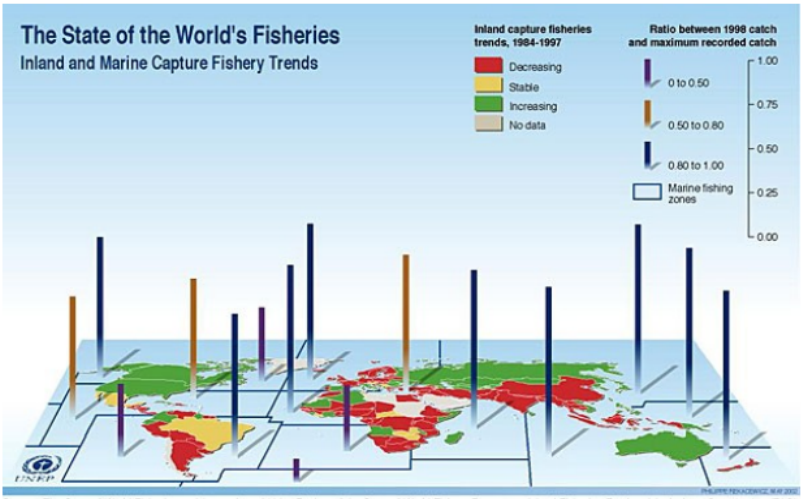
Between 1970 and 1999, the Freshwater Species Population Index fell by nearly 50%, which constitutes a very rapid decline in population indices.



Source: *Living Planet Report 2000*, World Wide Fund for Nature (WWF).

Fig – 3.4

The Freshwater Species Population Index measures the average change over time in the populations of some 194 species of freshwater birds, mammals, reptiles, amphibians and fish. The index represents the average of six regional indices, which measure freshwater species populations in Africa, Asia-Pacific, Australasia, Europe, Latin America and the Caribbean, and North America. There has been a much smaller decline over the past 30 years in the freshwater species of North America and Europe than those in the other regions. Much of the loss and degradation of freshwater ecosystems in the industrialized world took place prior to 1970.



Source: *The State of World Fisheries and Aquaculture 2000 ; Review of the State of World Fishery Resources: Inland Fisheries.* Food and Agriculture Organisation (FAO), 1999, Rome.

Fig – 3.5

The harvest of freshwater fish is likely to increase either through **capture fisheries** or **aquaculture** (otherwise known as 'fish farming'). In many developing countries, freshwater fish provide a significant contribution to the diets of local communities.

- The introduction of the non-native Nile Perch to Africa's Lake Victoria in 1954, combined with pollution loading and increased water turbidity resulting from agriculture and industrial development, has greatly reduced indigenous fish populations. Kenya for example, reported only 0.5% of its commercial fish catch as Nile Perch in 1976. Five years late, the proportion was 68%. Lake Victoria, the second largest lake in the world, has lost an estimated 200 different endemic species found nowhere else, while the remaining 150 are endangered. Two-thirds of the freshwater species introduced into the tropics worldwide have become established (Revenga et al., 1998)

- In Africa and Asia, fish provide 21% and 28% of all animal protein, respectively (Revenga et al., 1998). The figures are more significant in landlocked countries, where data on the fish caught are often not formally recorded, and their importance is not fully known.

- In 1999, the reported fish production form inland waters totaled 28 million tonnes, with contributions of 8.2 and 19.8 million tonnes from capture fisheries and aquaculture, respectively. With major under-reporting from subsistence fisheries, these figures could be twice as high (FAO, 2000).

FRESHWATER FISH DIVERSITY OF WESTERN GHATS

Several attempts have been made to compile a checklist of freshwater fishes of the Western Ghats. These attempts mainly focused on evolving with a comprehensive checklist of freshwater fishes, which is an outcome of the patchy (may be of a river basin, a region in the Western Ghats,

an administrative boundary within the Western Ghats, etc) taxonomic information available on the diversity of freshwater fishes. Daniels (2001) has listed 218 species from the Western Ghats of which 114 (52%) are endemic to Western Ghats. However, this report lacks a detailed checklist of fishes found in the Western Ghats. The subsequent checklist (Shaji *et al* 2001) listed 287 fishes with names of individual species. This compilation considered certain estuarine fishes that are found to ascend freshwater for longer distances. The list highlighted the presence of 67% endemic species and 18 exotic or transplanted to the region. The most recent information available is by Dahanukar *et al* 2004 that lists 288 freshwater fishes, of which 118 (41%) are endemic to Western Ghats. The threat status of fishes found in Western Ghats suggests that at least 41% of fish fauna is threatened by either being vulnerable, endangered, or critically endangered. This study also necessitates the implication of potent conservation measures to conserve the fish fauna of Western Ghats.

Present scenario

Present compilation of the checklist (Annexure) of the freshwater fishes in Western Ghats region lists 318 species of which 42.8% (136 species) are endemic to the region. Of this about 27 species are critically endangered and 55 endangered while 128 are data deficient. Altogether, 39.1% (123 species) of the freshwater fishes come under the category of critically endangered, endangered and vulnerable (Figure 1). Of the 27 critically endangered species 24 are endemic to the region. Similarly, of the 55 endangered species, 37 are endemic. Yet 49 endemic species are data deficient. A comparison of IUCN status between endemic and non-endemic species has been made in figure 2, which clearly shows that the endemic species comprises more of threatened species and the non-endemic comprise more of generalist species in Western Ghats.

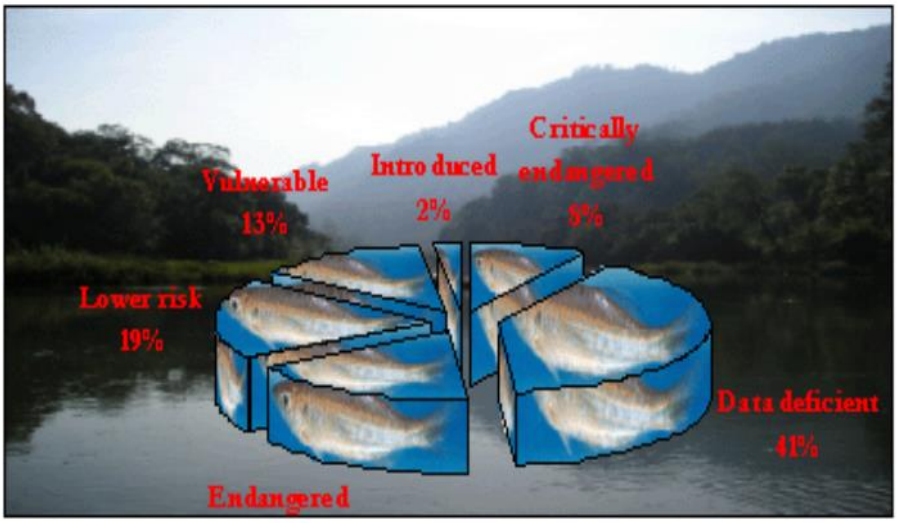


Fig – 3.6 - Composition with respect to IUCN status

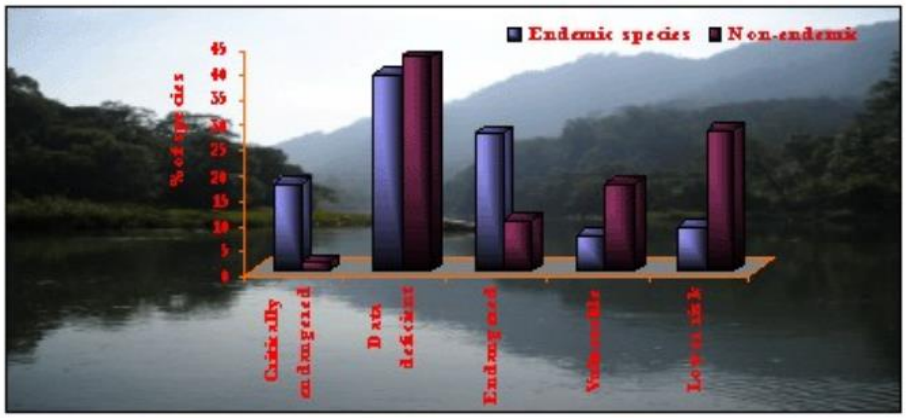


Fig – 3.7 - Comparison of the IUCN status between endemic and non endemic groups of fish species

Annexure:

*Checklist of freshwater fishes of Western Ghats (Compiled from various published sources)

Note : CR - Critically Endangered, EN - Endangered, VU - Vulnerable, LR - Lower Risk, DD - Data Deficient.

Endemic Species of Western Ghats

S.No.	Species Name	Status	S.No.	Species Name	Status
1	*Amblypharyngodon chakaiensis*	CR	69	*Monopterus eapeni*	CR
2	*Balitora brucei*	DD	70	*Mystus malabaricus*	EN
3	*Balitora mysorensis*	CR	71	*Mystus punctatus*	EN
4	*Barilius bakeri*	VU	72	*Nemacheilichthys ruppelli*	DD
5	*Barilius canarensis*	DD	73	*Nemacheilus anguilla*	LR
6	*Barilius evezardii*	LR	74	*Nemacheilus keralensis*	EN
7	*Barilius gatensis*	DD	75	*Nemacheilus monilis*	EN
8	*Batasio sharavatiensis*	DD	76	*Nemacheilus pambarensis*	DD
9	*Batasio travancoria*	EN	77	*Neolissochilus wynaadensis*	CR
10	*Bhavania australis*	EN	78	*Ompok malabaricus*	CR
11	*Botia striata*	EN	79	*Osteobrama bakeri*	EN
12	*Chela dadyburjori*	DD	80	*Osteobrama bheemensis*	DD
13	*Chela fasciata*	CR	81	*Osteobrama neilli*	DD
14	*Clarias dayi*	EN	82	*Osteocheilichthys longidorsalis*	CR
15	*Crossocheilus periyarensis*	VU	83	*Osteocheilichthys nashii*	VU

16	*Danio fraseri*	DD	84	*Osteocheilichthys thomassi*	EN
17	*Dayella malabarica*	LR	85	*Osteochilichthys godavariensis*	DD
18	*Esomus barbatus*	DD	86	*Osteochilus (Kantaka) brevidorsalis*	EN
19	*Etroplus suratensis*	LR	87	*Pangio bashai*	DD
20	*Eutropiichthys goongwaree*	DD	88	*Parambassis dayi*	EN
21	*Garra bicornuta*	DD	89	*Parapsilorhynchus discofhorus*	DD
22	*Garra gotyla stenorhynchus*	EN	90	*Parapsilorhynchus prateri*	DD
23	*Garra hughi*	EN	91	*Parmabassis thomassi*	VU
24	*Garra kalakadensis*	DD	92	*Pristolepis marginata*	VU
25	*Garra mcclellandi*	EN	93	*Pseudeutropius mitchelli*	DD
26	*Garra menoni*	VU	94	*Puntius arenatus*	DD
27	*Garra surendranathanii*	LR	95	*Puntius arulius arulius*	EN
28	*Glypthothorax conirostre poonaensis*	DD	96	*Puntius arulius tambraparniei*	CR
29	*Glyptothorax anamalaiensis*	CR	97	*Puntius bovanicus*	CR
30	*Glyptothorax devisinghi*	CR	98	*Puntius carnaticus*	VU
31	*Glyptothorax housei*	DD	99	*Puntius cauveriensis*	DD
32	*Glyptothorax lonah*	LR	100	*Puntius chalakudaiensis*	DD
33	*Glyptothorax madraspatanum*	VU	101	*Puntius crescentus*	DD
34	*Glyptothorax trewavasae*	DD	102	*Puntius deccanensis*	CR
35	*Gonoproktopterus curmuca*	EN	103	*Puntius denisonii*	EN
36	*Gonoproktopterus dubius*	EN	104	*Puntius fraseri*	DD
37	*Gonoproktopterus kolus*	EN	105	*Puntius goaensis*	EN
38	*Gonoproktopterus kurali*	EN	106	*Puntius jerdoni*	EN
39	*Gonoproktopterus lithopidos*	EN	107	*Puntius kannikattiensis*	DD
40	*Gonoproktopterus micropogon*	EN	108	*Puntius melanostigma*	EN
41	*Gonoproktopterus thomassi*	EN	109	*Puntius mudumalaiensis*	CR
42	*Heteropneustes longipectoralis*	DD	110	*Puntius narayani*	CR
43	*Homaloptera menoni*	DD	111	*Puntius ophicephalus*	EN
44	*Homaloptera montana*	CR	112	*Puntius parrah*	EN
45	*Homaloptera pillaii*	VU	113	*Puntius sahyadriensis*	DD
46	*Homaloptera santhampareiensis*	DD	114	*Puntius sarana subnasutus*	LR

47	*Horabagrus brachysoma*	EN	115	*Puntius setnai*	DD
48	*Horabagrus nigricollaris*	CR	116	*Puntius sharmai*	DD
49	*Horaglanis alikunhi*	DD	117	*Rasbora caverii*	DD
50	*Horaglanis krishnai*	CR	118	*Rasbora labiosa*	DD
51	*Horalabiosa joshuai*	DD	119	*Rohtee ogilbii*	LR
52	*Horalabiosa palaniensis*	DD	120	*Salmostoma boopis*	LR
53	*Hyporhampus xanthopterus*	CR	121	*Salmostoma horai*	DD
54	*Labeo ariza*	CR	122	*Salmostoma novacula*	LR
55	*Labeo dussumieri*	EN	123	*Schismatorhynchus (Nukta) nukta*	DD
56	*Labeo kontius*	EN	124	*Schistura denisoni mukambbikaensis*	DD
57	*Labeo nigrescens*	DD	125	*Schistura denisoni pambarensis*	DD
58	*Labeo potail*	DD	126	*Schistura kodaguensis*	DD
59	*Lepidopygopsis typus*	CR	127	*Schistura nilgiriensis*	EN
60	*Longischistura striatus*	DD	128	*Schistura semiarmatus*	VU
61	*Macropodus dayi*	DD	129	*Schistura sinuatus*	DD
62	*Mesonemacheilus guentheri*	LR	130	*Silonia childreni*	EN
63	*Mesonemacheilus herrei*	DD	131	*Silurus wynaadensis*	CR
64	*Mesonemacheilus petrubanarescui*	DD	132	*Tetraodon travancoricus*	EN
65	*Mesonemacheilus pulchellus*	DD	133	*Tor khudree malabaricus*	CR
66	*Mesonemacheilus triangularis*	LR	134	*Tor mussulah*	CR
67	*Monopterus (Amphipnous) fossorius*	EN	135	*Travancoria jonesi*	EN
68	*Monopterus (Amphipnous) indicus*	DD	136	*Travencoria elongata*	CR

Non-endemic Species of Western Ghats

S.No.	Species Name	Status	S.No.	Species Name	Status
1	*Acanthocobitis botia*	LR	89	*Mastacembelus armatus*	LR
2	*Acanthocobitis moreh*	DD	90	*Megalops cyprinoides*	DD
3	*Ambassis gymnocephalus*	DD	91	*Microphis cuncalus*	VU
4	*Ambassis interruptus*	DD	92	*Mugil cephalus*	DD

5	*Ambassis nalua*	DD	93	*Mystus armatus*	LR
6	*Amblypharyngodon melettinus*	LR	94	*Mystus bleekeri*	VU
7	*Amblypharyngodon microlepis*	DD	95	*Mystus cavesius*	LR
8	*Amblypharyngodon mola*	LR	96	*Mystus gulio*	LR
9	*Anabas testudineus*	VU	97	*Mystus keletius*	DD
10	*Anguilla bengalensis bengalensis*	EN	98	*Mystus menoda*	DD
11	*Anguilla bicolor bicolor*	EN	99	*Mystus montanus*	VU
12	*Aphanius dispar*	DD	100	*Mystus oculatus*	LR
13	*Aplocheilus blocki*	DD	101	*Mystus viittatus*	VU
14	*Aplocheilus lineatus*	LR	102	*Nandus nandus*	LR
15	*Aplocheilus panchax*	DD	103	*Nangra itchkeea*	DD
16	*Aspidoparia morar*	LR	104	*Nemacheilus beavani*	DD
17	*Awaous grammepomus*	DD	105	*Nemacheilus viridescens*	LR
18	*Awaous gutum*	DD	106	*Neotropius khavalchor*	DD
19	*Badis badis*	DD	107	*Notopterus chitala*	EN
20	*Bagarichthys yarrellii*	DD	108	*Notopterus notopterus*	LR
21	*Bagarius bagarius*	VU	109	*Omobranchus punctatus*	DD
22	*Balitora brucei*	LR	110	*Omobranchus zebra*	DD
23	*Barilius barila*	VU	111	*Ompok bimaculatus*	EN
24	*Barilius barna*	LR	112	*Ompok pabo*	DD
25	*Barilius bendelisis*	LR	113	*Oreichthys cosuatis*	DD
26	*Barilius vagra*	VU	114	*Oreonectes evezardi*	EN
27	*Bathygobius fuscus*	DD	115	*Oryzias melastigma*	DD
28	*Brachydanio rerio*	LR	116	*Osphronemus goramy*	DD
29	*Brachygobius nunus*	DD	117	*Osteobrama belangeri*	EN
30	*Catla catla*	VU	118	*Osteobrama cotio cotio*	LR
31	*Chanda nama*	VU	119	*Osteobrama cotio cunma*	VU
32	*Channa marulius*	LR	120	*Osteobrama cotio peninsularis*	EN
33	*Channa micropeltes*	CR	121	*Osteobrama vigorsii*	DD
34	*Channa orientalis*	VU	122	*Pangasius pangasius*	CR
35	*Channa punctatus*	LR	123	*Parambassis ranga*	DD
36	*Channa striatus*	LR	124	*Parapsilorhynchus*	DD

				tentaculatus	
37	*Chela cachius*	DD	125	*Periophthalmus variabilis*	DD
38	*Chela laubuca*	LR	126	*Pomadasys argenteus*	DD
39	*Chelonodon patoca*	DD	127	*Pristolepis fasciata*	DD
40	*Cirhinus fulungee*	LR	128	*Proeutropiichthys taakree taakree*	CR
41	*Cirhinus mrigala mrigala*	LR	129	*Pseudambassis baculis*	DD
42	*Cirhinus reba*	VU	130	*Pseudeutropius atherinoides*	EN
43	*Cirrhinus cirrhosus*	VU	131	*Puntius amphibius*	LR
44	*Clarias batrachus*	VU	132	*Puntius bimaculatus*	DD
45	*Clarias dussumieri dussumieri*	VU	133	*Puntius burmanicus*	DD
46	*Crossocheilus latius latius*	DD	134	*Puntius chola*	VU
47	*Danio aequipinatus*	LR	135	*Puntius conchonius*	VU
48	*Danio malabaricus*	LR	136	*Puntius dorsalis*	EN
49	*Danio neilgherriensis*	DD	137	*Puntius fasciatus fasciatus*	EN
50	*Esomus danricas*	VU	138	*Puntius filamentosus*	DD
51	*Esomus thermoicos*	DD	139	*Puntius guganio*	LR
52	*Etroplus canarensis*	DD	140	*Puntius phutunio*	LR
53	*Etroplus maculatus*	LR	141	*Puntius pleurotaenia*	VU
54	*Euryglossa orientalis*	DD	142	*Puntius sarana orphoides*	DD
55	*Eutropichthys vacha*	EN	143	*Puntius sarana sarana*	VU
56	*Gagata gagata*	DD	144	*Puntius sophore*	LR
57	*Garra gotyla gotyla*	VU	145	*Puntius ticto ticto*	LR
58	*Garra lamta*	DD	146	*Puntius vittatus*	VU
59	*Garra mullya*	LR	147	*Rasbora daniconius*	LR
60	*Glossogobius giuris*	LR	148	*Rasbora rasbora*	DD
61	*Glyptothorax annandalei*	EN	149	*Rhinomugil corsula*	VU
62	*Glyptothorax saisii*	EN	150	*Rita kuturnee*	LR
63	*Heteropneustes fossilis*	VU	151	*Rita pavimentatus*	EN
64	*Hilsa ilisha*	VU	152	*Rita rita*	LR
65	*Hilsha kelee*	DD	153	*Salmo gardineri*	DD
66	*Horaichthys setnai*	DD	154	*Salmostoma acinaces*	VU
67	*Hyporhamphus limbatus*	DD	155	*Salmostoma bacaila*	LR

68	*Ichthyocampus carce*	DD	156	*Salmostoma clupeoides*	EN
69	*Johnius belangerii*	DD	157	*Salmostoma phulo*	DD
70	*Labeo bata*	LR	158	*Scatophagus argus*	DD
71	*Labeo boga*	LR	159	*Schistura denisoni denisoni*	VU
72	*Labeo boggut*	DD	160	*Schistura savona*	DD
73	*Labeo calbasu*	LR	161	*Schistura denisoni dayi*	DD
74	*Labeo fimbriatus*	LR	162	*Sicyopterus fasciatum*	DD
75	*Labeo gonius*	LR	163	*Silurus berdmorei*	DD
76	*Labeo kawrus*	DD	164	*Sperata aor*	DD
77	*Labeo pangusia*	LR	165	*Sperata seenghala*	DD
78	*Labeo porcellus*	DD	166	*Stigmatogobius javanicus*	DD
79	*Labeo rohita*	LR	167	*Stigmatogobius sadanundio*	DD
80	*Labeo sindensis*	DD	168	*Strongylura strongylura*	DD
81	*Lepidocephalus guntea*	DD	169	*Sciopterus griseus*	VU
82	*Lepidocephalus thermalis*	LR	170	*Tor khudree*	VU
83	*Liza macrolepis*	DD	171	*Tor mosal*	EN
84	*Liza parsia*	DD	172	*Tor putitora*	EN
85	*Lutjanus johni*	DD	173	*Tor tor*	EN
86	*Macrognathus guentheri*	VU	174	*Wallago attu*	LR
87	*Macrognathus pancalus*	LR	175	*Xenentodon cancila*	LR
88	*Macropodus cupanus*	DD	176	*Zenarchopterus striga*	DD

Introduced Species

S.No.	Species Name
1	*Ctenopharyngodon idella*
2	*Cyprinus carpio communis*
3	*Gambusia affinis*
4	*Oreochromis mossambica*
5	*Poecilia (Lebistes) reticulata*
6	*Xiphophorus helleri*