

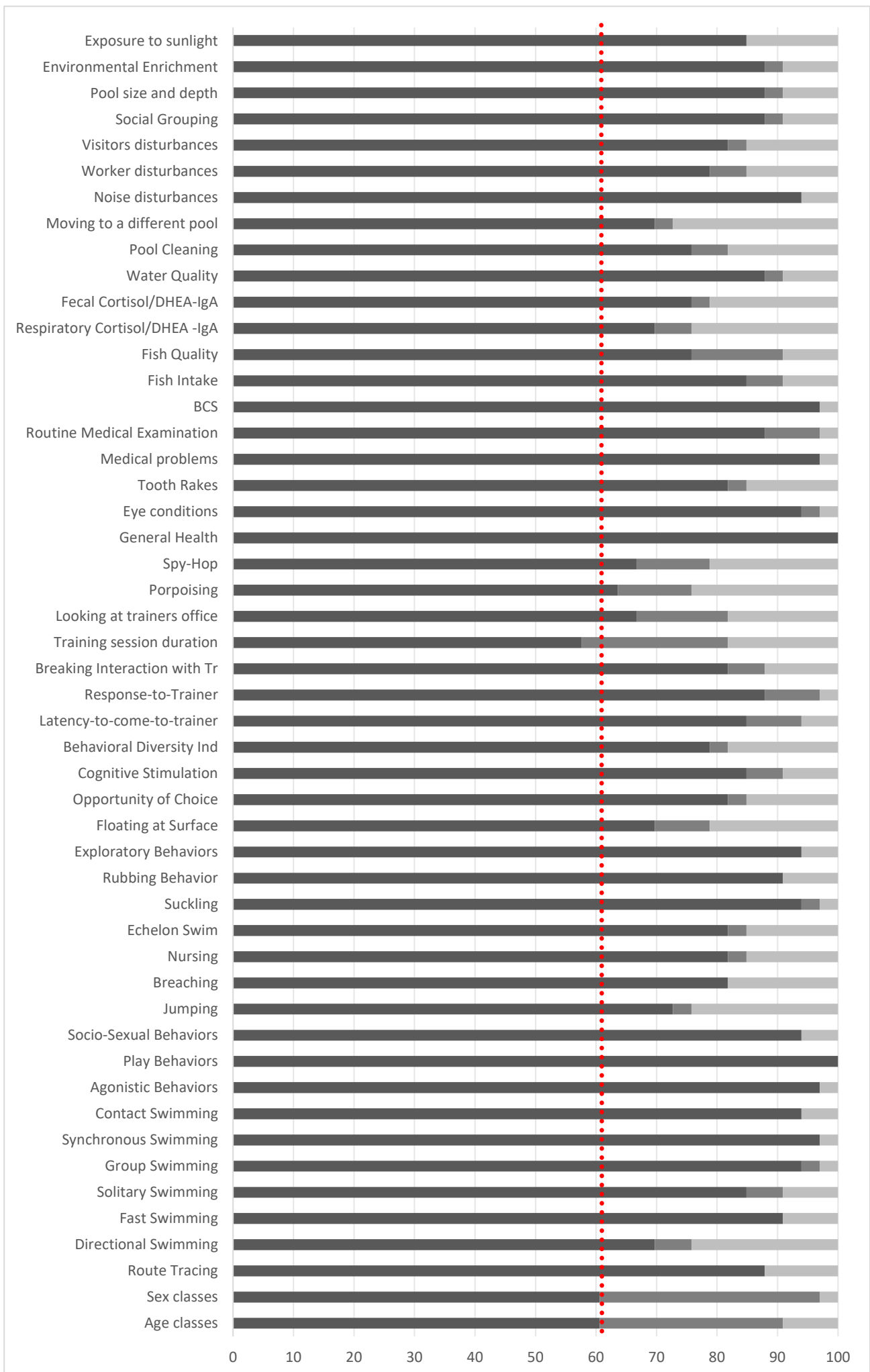
Panel Review Tables and Figures

S-1. Experts' characteristics involved in the two rounds of surveys (numbers indicate % of experts' response) for Panel 1 (total of 30 responses) and for Panel 2 (total of 33 responses).

Characteristic	Level	Panel 1	Panel 2
Education	PhD	46.3	63.6
	Master	30.0	24.2
	Bachelor	23.3	12.1
Expertise	Animal Behavior	56.7	48.5
	Animal Welfare	56.7	57.6
	Veterinary Medicine	40.0	42.4
	Conservation	26.7	30.3
	Biology/Ecology		
	Animal Sciences	20.0	15.2
	Other	3.0	15.2
Familiarity with animal welfare	Extremely familiar	16.7	27.3
	Very familiar	36.7	24.2
	Familiar	23.3	18.2
	Somewhat familiar	10.0	30.3
	Not at all familiar	13.3	0.0
Familiarity with cetaceans	Extremely familiar	16.7	39.4
	Very familiar	30.0	36.4
	Familiar	20.0	18.2
	Somewhat familiar	23.3	12.1
	Not at all familiar	10.0	0.0
Knowledge of YFP	Excellent	13.3	21.2
	Good	26.7	18.2
	Fair	23.3	18.2
	Poor	30.0	24.2
	Very poor	6.0	18.2

S-2. Experts' opinion regarding the validity of the 49 indicators considered for the development of the welfare assessment tool for the YFP. The red dot line represents the limit (60% of "Yes" answers) for the inclusion of the indicators in the welfare assessment framework.

■ Yes% ■ No% ■ Unsure%



S-3. Welfare alerting (WA) and welfare status (WS) indicators contributing to Domain 1 (Nutrition -D1), Domain 2 (Environment- D2), Domain 3 (Health- D3), and Domain 4 (Behavioral Interactions -D4), and the associated inferred mental states and intensity levels for Yangtze Finless porpoises. Numbers in parentheses are confidence scores attributed by experts to mental states and intensity levels based on their knowledge and experience. Numbers in parentheses in the conditions column of Domain 2 are the domains that the specific indicator is affecting as WA indices.

Domain	Valence	Category	Indicator	Conditions	Intensity Level/ Confidence Scores	Mental state/Confidence Scores
D1	Welfare Enhancement	Welfare Status	Body Condition	Ideal	+++ (3)	Comfort (2) Satiated (3)
			Fish intake	Optimal	+++ (3)	Satiated (3)
			Frequency of feeding	Optimal	+++ (3)	Satiated (3) Satisfied (3) Motivation to eat (3)
			Fish quality	Good	+++ (3)	Satiated (3) Satisfied (3) Motivation to eat (3)
		Welfare Alerting	Trainer's Experience	Experienced	+ (2)	Motivated to eat (2) Comfort (0)
			Latency to come to the trainer	0-1 minute	++ (2)	Satiated (3) Comfort (3)
			Breaking Interaction with the trainer	0-3 times	++ (2)	Satiated (3) Comfort (3)
			Response to the trainer	Approach/good motivation	++ (2)	Satiated (3) Comfort (3)
	Welfare Compromise	Welfare Status	Body Condition	Skinny	D (3)	Hunger (3)
				Overweight	B (3)	Gluttonous (1)
			Fish intake	Sub-optimal	D (3)	Hungry (3) Loss of appetite (1)
			Frequency of Feeding	Sub-optimal	D (1)	Hungry (3) Discomfort (2) Weakness (1)

			Fish Quality	Poor	D (3)	Hungry (2) Disgusted (2) Unmotivated to eat (2)
		Welfare Alerting	Pool Cleaning	Presence	D (3)	Unmotivated to eat (2) Hungry (1)
			Moving to a different pool	Presence	D (3)	Unmotivated to eat (2) Hungry (0)
			Trainer's Experience	Not-experienced	B (2)	Lack motivation to eat (2)
			Humans-made-noises disturbance	Presence	C (3)	Unmotivated to eat (2)
			Unfamiliar human presence	Presence negative	B (1)	Unmotivated to eat (1)
			Removal of food due to non-cooperation	Presence	C (3)	Hungry (2)
			Reproductive State	Pregnant	B (2)	Unmotivated to eat (2)
				Nursing	B (2)	Unmotivated to eat (2)
			Fecal/Blowhole Cortisol/DHEA ratio	ratio > 0	D (2)	Unmotivated to eat (2)
			Fecal/Blowhole IgA levels	Below minimum requirements	D (2)	Unmotivated to eat (2)
			Latency to come to the trainer	over 1 minute	C (2)	Hungry (1)
			Breaking interaction with the trainer	more than 3 times	C (2)	Hungry (1)
			Response to the trainer	No approach	C (2)	Hungry (1)
				Approach-low motivation	C (2)	Not satiated (1)

Domain	Valence	Category	Parameter	Conditions	Intensity Level/ confidence scores	Mental state and confidence scores
D2	Welfare Enhancement	Welfare Alerting	Water quality	Acceptable (D3)	++ (2)	Comfort (0)
			Pool Cleaning	Presence (D3)	++ (2)	Comfort (0)
			Hygiene of fish preparation room	Good (D3)	+ (3)	Comfort (0)
			Pool size and depth	Optimal (D4)	+ (2)	Comfort (1)
			Exposure to sunlight	Presence Positive (D3)	+ (2)	Comfort (1) Pleasure (0)
				Presence Positive (D4)	+++ (2)	Active (1)

			Environmental enrichment	Presence (D4)	+++ (3)	Stimulated (3) Curious (2) Interactive (1) Engaged (1) Playful (1) Sense of agency (2)
			Trainer's experience	Experienced (D1)	+ (2)	Motivated to eat (2) Comfort (0)
				Experienced (D4)	+ (2)	Engaged (3) Playful (1) Cooperative (2)
			Unfamiliar human presence	Presence positive (D4)	+ (1)	Curious (2) Interactive (2) Playful (2)
			Opportunity of Choice	Presence (D4)	+++ (3)	In control (3) Stimulated (3) Satisfied (2)
			Diversity of training sessions	Presence (D4)	+++ (2)	Stimulated (2) Curious (0) Engaged (1) Playful (0)
			Social Composition	Social grouping Positive (D4)	+++ (3)	Social support (3) Affectionate (2) Playful (2) Sexually fulfilled (1) Comfort (1)
				Same-sex-grouping-Females (D4)	+ (1)	Social support (2) Affectionate (2) Playful (1)
	Welfare Compromise	Welfare Alerting	Water quality	Unacceptable(D3)	D (2)	Discomfort (1)
			Pool cleaning	Absence (D3)	C (2)	Discomfort (1)
				Presence (D1)	D (3)	Unmotivated to eat (2) Hungry (1)

				Presence (D4)	D (3)	Fear (3) Uncomfortable (3) Distressed (3) Vigilance (3) Insecurity (1) Panic (1)
			Hygiene of fish preparation room	Bad (D3)	D (3)	Discomfort (2) Gastrointestinal discomfort (2)
			Moving to a different pool	Presence (D1)	D (3)	Unmotivated to eat (2) Hungry (0)
				Presence (D4)	D (3)	Lost control (3) Panic (3) Vigilant (2) Fear (3) Feeling lack of social support (2) Distressed (3)
			Pool size and depth	Sub-Optimal	D (2)	Discomfort (3) Boredom (3) Frustration (2)
			Exposure to sunlight	Absence (D3)	C (1)	Discomfort (1)
				Absence (D4)	D (1)	Depressed (1)
				Presence Negative (D3)	D (2)	Discomfort (2) Pain (2) Malaise (1)
				Presence Negative (D4)	D (2)	Annoyed (1) Frustration (1)
			Environmental enrichment	Absence (D4)	D (3)	Frustration (1) Bored (2)
			Trainer's experience	Not-experienced (D1)	B (2)	Lack motivation to eat (2)
				Not-experienced (D4)	B (2)	Frustrated (2) Bored (2)

						Loss of control (1)
				Presence (D1)	C (3)	Unmotivated to eat (2)
			Human-made-noise disturbances	Presence (D4)	D (3)	Agitated (2) Annoyed (1) Vigilant (3) Discomfort (1) Loss of control (2) Fear (1)
				Presence (D3)	B (3)	Acoustic discomfort (2) Disorientation (1)
			Unfamiliar human presence	Presence negative (D1)	B (1)	Unmotivated to eat (1)
				Presence negative (D4)	B (1)	Fear (1) Anxiety (0) Annoyance (2) Hyper-vigilance (2) Loss of control (1)
			Opportunity of Choice	Absence (D4)	D (3)	Frustration (2) Bored (2)
			Diversity of training sessions	Absence (D4)	D (2)	Bored (3) Unmotivated to participate (3)
			Group housing	Solitary housing- Presence (D4)	D (3)	Lonely (3) Apathetic (1) Frustrated (1) Depressed (2) Bored (2)
				Same-sex-housing Males (D4)	B (1)	Sexually frustrated (2)
				Same-sex-housing Females (D4)	B (1)	Sexually frustrated (0)
				Negative (D4)	D (3)	Discomfort (2) Withdrawn (2) Fear (2) Frustration (2)

						Anxiety (2)
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Domain	Valence	Category	Parameter	Conditions	Intensity Level/ confidence scores	Mental state and confidence scores
D3	Welfare Enhancement	Welfare Status	General Health	Adequate	++ (3)	Vitality (3) Comfort (2)
		Welfare Alerting	Water quality	Good	++ (2)	Comfort (0)
			Pool Cleaning	Presence	++ (2)	Comfort (0)
			Hygiene of fish preparation room	Good	+ (3)	Comfort (0)
			Exposure to sunlight	Presence positive	+ (2)	Comfort (1)
			Frequency of feeding	Optimal	++ (1)	Energetic (2) Comfort (2)
			Fish quality	Good quality	++ (3)	Gastrointestinal comfort (2) Vitality (2)
			Body condition scoring	Ideal	+ (3)	Comfort (2) Vital (2)
			Fish intake	Optimal	+++ (3)	Vitality (2) Comfort (0)
			Suckling	Presence	+++ (3)	Energetic (1) Active (1)
			Latency to come to the trainer	(0-1 minute)	++ (2)	Energetic (3) Vital (3)
			Breaking interaction with the trainer	(0-3 times)	++ (2)	Energetic (3) Vital (3)
			Response to the trainer	Approach-good motivation	++ (2)	Energetic (3) Vital (3)
			Routine medical examinations	Performed	+++ (3)	Comfort (0)
	Welfare compromise	Welfare Status	General health	Sub-optimal	C (3)	Weakness (2) Apathy (2) Pain (2) Discomfort (3)

						Gastrointestinal discomfort (0)
				Poor health	D (3)	Debilitation (3) Breathlessness (1)
			Reproductive state	Pregnancy	C (1)	Fatigue (2) Discomfort (1) Malaise (0)
				Nursing	C (1)	Fatigue (0) Discomfort (0)
			Tooth rakes	Presence	B (1)	Unease (2) Pain (1)
			Eye conditions	Presence	D (3)	Discomfort (2) Itchy (1) Pain (1)
			Skin conditions	<35% skin marks	C (2)	Discomfort (3) Unease (2) Itchy (2)
				> 35% skin marks	D (2)	Pain (2) Malaise (1)
			Fecal/Blowhole Cortisol/DHEA ratio	ratio > 0	D (2)	Discomfort (2)
			Fecal/Blowhole IgA levels	Below minimum requirements	D (2)	Weakness (1) Unease to breath (0) Gastrointestinal discomfort (0)
		Welfare Alerting	Water quality	Bad	D (2)	Discomfort (1)
			Pool cleaning	Absence	C (2)	Discomfort (1)
			Hygiene of fish preparation room	Bad	D (3)	Discomfort (2) Gastrointestinal discomfort(2)
			Human-made-noises disturbance	Presence	B (3)	Acoustic discomfort (2) Disorientation (1)
			Exposure to sunlight	Presence negative	D (2)	Discomfort (2) Pain (2) Malaise (1)

				Absence	C (1)	Discomfort (1)
			Frequency of feeding	Sub-optimal	C (1)	Weakness (1)
			Fish quality	Poor quality	D (3)	Gastrointestinal discomfort (2) Weakness (0) Nausea (0)
			Body condition scoring	Skinny	D (3)	Weakness (3) Apathy (1) Debilitated (2) Malaise (1)
				Overweight	B (3)	Unease to swim (0)
			Fish intake	Sub-optimal	D (3)	Weakness (2) Discomfort (1)
			Suckling	Absence	D (3)	Weakness (2) Debilitated (1)
			Rubbing behavior	Presence negative	C (1)	Itchy (2) Uncomfortable (2)
			Latency to come to the trainer	(Over 1 minute)	C (2)	Discomfort (0) Weakness (0) Malaise (1) Sickness (1)
			Breaking the trainer's interaction	(more than 3 times)	D (2)	Discomfort (0) Weakness (0) Malaise (1) Sickness (1)
			Response to the trainer	no approach	D (2)	Weakness (0) Malaise (1) Sickness (1)
				Approach-low motivation	C (2)	Discomfort (0)
			Routine medical examinations	Not performed	D (1)	Discomfort (0)

Domain	Valence	Category	Parameter	Conditions	Intensity Level/ confidence scores	Mental state and confidence scores
D4	Welfare Enhancement	Welfare Status	Solitary swimming	Slow positive	+ (2)	Relaxed (2)
			Group swimming	Presence slow swim	++ (2)	Safe (1) Comfort (1)
			Swimming patterns	Slow swim	++ (2)	Social support (2) Relaxed (2) Comfort (1)
			Play behaviors	Presence	+++ (3)	Fulfilled (2) Playful (3) Relaxed (3) Comfortable (2) Satisfied (2) Pleasure (3)
			Socio-sexual behaviors	Presence normal rate	+ (1)	Sexual fulfillment (3) Socially supported (2) Comfort (3) Satisfied (3) Aroused (3) Pleasure (3)
			Aerial behaviors	Presence Positive	+ (1)	Playfulness (1) Content (0) Vitality (3)
			Calf swim (echelon or infant swim)	Presence slow speed	++ (2)	Social support (3) Comfort (3) Relaxed (1) Safe (2)
			Rubbing behavior	Presence positive	+ (1)	Comfort (2) Pleasure (2)
			Exploratory behaviors	Presence	++ (2)	Curious (3) Satisfied (2) In control (2) Stimulated (3)

			Floating at the surface	Presence positive	+ (1)	Relaxed (1) Comfort (1)
			Behavioral diversity index	Positive	+++ (2)	In control (2) Curious (0) Fulfilled (1) Playful (1)
			Latency to come to the trainer	(0-1 minute)	++ (2)	Engaged (3) Interactive (3) Motivated (3)
			Breaking the interaction with the trainer	(0-3 times)	++ (2)	Engaged (3) Interactive (3) Motivated (3)
			Response to the trainer	Approach-good motivation	++ (2)	Engaged (3) Interactive (3) Motivated (3)
			Anticipatory behaviors	Presence positive	+ (2)	Excited (2) Curious (1) Anticipation (3)
			Interaction with enrichment devices	Presence	+++ (3)	Stimulated (3) Curious (2) Interactive (1) Engaged (1) Playful (1) Sense of agency (2)
			Suckling	Presence	++ (2)	Social (3) Interactive (2) Satisfied (1)
		Welfare Alerting	Trainer's experience	Experienced	+ (2)	Engaged(3) Playful (1) Cooperative (2)
			Unfamiliar human presence	Presence positive	+ (1)	Curious (2) Interactive (2) Playful (2)

			Pool size and depth	Optimal	+ (2)	Comfort (1)
			Exposure to sunlight	Presence positive	+++ (2)	Pleasure (0) Active (1)
			Opportunity of choice	Presence	+++ (3)	In control (3) Stimulated (3) Satisfied (2)
			Diversity of training sessions	Presence	+++ (2)	Stimulated (2) Curious (0) Engaged (1) Playful (0)
			Social composition	Group housing positive	+++ (3)	Social support (3) Affectionate (2) Playful (2) Sexually fulfilled (1) Comfort (1)
				Same sex grouping - Females	+ (1)	Social support (2) Affectionate (2) Playful (1)
			Environmental enrichment	Presence	+++ (3)	Stimulated (3) Curious (2) Interactive (1) Engaged (1) Playful (1) Sense of agency (2)
			Reproductive state	Pregnancy	++ (2)	Fulfillment of reproduction drive (2)
				Nursing	++ (2)	Maternal affection (2)
			Frequency of feeding	Optimal	++ (2)	Feeling in control (1) Vitality (1) Interactive (2)
	Welfare Compromise	Welfare Status	Route tracing	Presence	C (1)	Bored (2) Frustrated (2) Lack of agency (3)

						Distressed (1)
			Directional Swimming	Clock-wise/Counter-clockwise	C (1)	Bored (2) Frustrated (2) Lack of agency (3) Distressed (1)
			Solitary swimming	Presence slow speed negative	C (3)	Loneliness (2) Withdrawn (2)
				Presence fast speed	B (3)	Vigilant (2) Distressed (1) Fear (1)
			Group swimming	Presence fast speed	D (3)	Distress (2) Fear (2) Annoyance (2)
			Swimming patterns	Fast swim	D (3)	Hyper vigilant (3) Distressed (3) Fear (2) Annoyance (1)
			Aggressive behaviors:	Presence actor	C (2)	Fear (1) Aroused (2) Threatened (1) Anxious (0) Intolerant (2) Angry (2) Distressed (1)
				Presence receiver	C (2)	Fear (2) Aroused (2) Threatened (2) Anxious (0) Angry (1) Distressed (3)
			Play behaviors	Absence	D (1)	Bored (2) Depressed (1) Distressed (2)

			Socio-sexual behaviors	Presence high rate	C (1)	Distressed (1) Frustrated (1) Anxious (2) Bored (2) Aroused (3)
			Aerial behaviors	Presence negative	D (2)	Fear (2) Panic (2) Hyper vigilant (2)
			Echelon/infant swim	Presence high speed	C (2)	Fearful (2) Vigilant (2)
				Absence mother	D (3)	Distressed (3) Irritability (3) Intolerance (3)
				Absence calf	D (3)	Frustrated (1) Insecure (2) Fear (1) Lack of maternal support (3)
			Rubbing behavior	Presence negative	C (1)	Frustration (0) Distressed (0) Boredom (0)
			Floating at the surface	Presence negative	C (1)	Bored (1) Depressed (1)
			Behavioral diversity index	Negative	D (2)	Bored (2) Frustrated (2) Lack of control (1) Distressed (1)
			Fleeing behaviors	Presence	C (3)	Fear (3) Panic (2) Frustrated (1) Distressed (3) Hyper vigilant (2)
			Latency to come to the trainers	(over 1 minute)	C (2)	Unmotivated (2) Bored (2)

						Frustrated (2)
			Breaking the interaction with the trainer	(more than 3 times)	C (2)	Unmotivated (2) Bored (2) Frustrated (2)
			Response to the trainer	no approach	D (2)	Unmotivated (2)
				Approach-low motivation	C (2)	Bored (2) Frustrated (2)
			Anticipatory behaviors	Presence negative	C (1)	Hyper vigilant (3) Bored (3)
				Absence	B (2)	Unmotivated (2)
			Interaction with enrichment devices	Absence	D (3)	Frustration (1) Bored (2)
			Suckling	Absence	D (3)	Depressed (1) Frustrated (1)
		Welfare Alerting	Pool cleaning	Presence	D (3)	Fear (3) Uncomfortable (3) Distressed (3) Vigilance (3) Insecurity (1) Panic (1)
			Moving to a different pool	Presence	D (3)	Lost control (3) Panic (3) Vigilant (2) Fear (3) Feeling lack of social support (2) Distressed (3)
			Trainer's Experience	Not-experienced	B (2)	Frustrated (2) Bored (2) Loss of control (1)
			Human-made-noises disturbances	Presence	D (3)	Agitated (2) Annoyed (1) Vigilant (3)

						Discomfort (1) Loss of control (2) Fear (1)
			Unfamiliar human presence	Presence negative	B (1)	Fear (1) Anxiety (0) Annoyance (2) Hyper vigilance (2) Loss of control (1)
			Pool size and depth	Sub-optimal	D (2)	Discomfort (3) Boredom (3) Frustration (2)
			Exposure to sunlight	Presence negative	D (2)	Annoyed (1) Frustration (1)
				Absence	D (1)	Depressed (1)
			Opportunity of choice	Absence	C (3)	Frustration (2) Bored (2)
			Diversity of training sessions	Absence	D (2)	Bored (3)
			Social grouping	Presence negative	D (3)	Discomfort (2) Withdrawn (2) Fear (2) Frustration (2) Anxiety (2)
			Solitary housing	Presence	D (3)	Lonely (3) Apathetic (1) Frustrated (1) Depressed (2) Bored (2)
			Same sex-grouping	Males	B (1)	Sexually frustrated (2)
				Females	B (1)	Sexually frustrated (0)
			Environmental enrichment	Absence	D (3)	Frustration (1) Bored (2)
			Removal of food due to non-cooperation	Presence	C (3)	Frustration (3) Loss of control (2)

			Reproductive state	Pregnancy	B (1)	Irritability (0)
				Nursing	B (1)	Irritability (0)
			Eye conditions	Presence	D (3)	Withdrawn (1) Apathy (1)
			Skin conditions	<35% skin marks	C (2)	Fastidious (0) Nervous (0)
				> 35% skin marks	D (2)	Withdrawn (0)
			Fecal/Blowhole cortisol:DHEA ratio	Positive	D (2)	Distressed (2) Anxious (2)
			Fecal/Blowhole IgA levels	below normal requirements	D (2)	Withdrawn (0) Unease (0)
			Frequency of feedings	Sub-optimal	C (1)	Feeling lack of control (2) Frustration (2) Anxious (1)