

Z0073 Terénní cvičení z geomorfologie, pedogeografie a biogeografie
Tomáš ČEJKA
Jakub ČERNOVSKÝ
Martin HARÁSEK
Lukáš PATRNČIAK
Jiří STEHNO
Vojtěch UMLAUF
11. – 15. 5. 2015, CHKO Litovelské Pomoraví a červen 2015, Brno

Závěrečná zpráva z terénního cvičení

B. Hydromorfologický monitoring (River habitat survey)

1) Formulář

RIVER HABITAT SURVEY 2003 Version				Page 1 of 4				
A FIELD SURVEY DETAILS								
Site Number: <input type="text"/> <small>leave blank if new site</small> Site Reference: Spot-check 1 Grid Ref: Spot-check 6 Grid Ref: End of site Grid Ref: Reach Reference: River name: <i>Trčický náhon</i> Date <i>13/05/2015</i> Time: <i>16:15</i> Surveyor name: <i>Jiří Stehno</i> Accredited Surveyor code:				Is the site part of a river or an artificial channel? River <input checked="" type="checkbox"/> Artificial <input type="checkbox"/> Are adverse conditions affecting survey? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> If yes, state Is bed of river visible? barely or not <input type="checkbox"/> partially <input checked="" type="checkbox"/> ±entirely <input type="checkbox"/> Is health and safety assessment form attached? Yes <input type="checkbox"/> No <input type="checkbox"/> Number of photographs taken: <input type="text"/> Photo references: Site surveyed from: left bank <input checked="" type="checkbox"/> right bank <input type="checkbox"/> channel <input type="checkbox"/> <input type="checkbox"/> When options shown with 'shadow boxes', tick one box only				
B PREDOMINANT VALLEY FORM (within the horizon limit) (tick one box only)								
(tick one box only)								
<input type="checkbox"/> shallow vee <input type="checkbox"/> deep vee <input type="checkbox"/> gorge		<input type="checkbox"/> concave/bowl <input type="checkbox"/> asymmetrical valley <input type="checkbox"/> U-shape valley <input checked="" type="checkbox"/> no obvious valley sides		Distinct flat valley bottom? No <input type="checkbox"/> Yes <input checked="" type="checkbox"/>		Natural terraces? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>		
C NUMBER OF RIFFLES, POOLS AND POINT BARS (enter total number in boxes)								
Riffle(s) <input type="text"/>		Unvegetated point bar(s) <input type="text"/>		Pool(s) <input type="text"/>		Vegetated point bar(s) <input type="text"/>		
D ARTIFICIAL FEATURES (indicate total number of occurrences of each category within the 500m site)								
If none, tick box <input type="checkbox"/>		Major	Intermediate	Minor		Major	Intermediate	Minor
	Weirs/sluiques	-	-	1	Outfalls/intakes			
	Culverts	-			Fords			
	Bridges			1	Deflectors/groynes/croys			
	Other - state							
Is channel obviously realigned?		No <input type="checkbox"/>		Yes, <33% of site <input checked="" type="checkbox"/>		≥33% of site <input type="checkbox"/>		
Is channel obviously over-deepened?		No <input checked="" type="checkbox"/>		Yes, <33% of site <input type="checkbox"/>		≥33% of site <input type="checkbox"/>		
Is water impounded by weir/dam?		No <input checked="" type="checkbox"/>		Yes, <33% of site <input type="checkbox"/>		≥33% of site <input type="checkbox"/>		

Obr. 1 Formulář – část 1

SITE REF.	RIVER HABITAT SURVEY: TEN SPOT-CHECKS										Page 2 of 4	
Spot-check 1 is at: upstream end <input type="checkbox"/> downstream end <input type="checkbox"/> of site (tick one box)												
E PHYSICAL ATTRIBUTES (to be assessed across channel within 1m wide transect)												
When boxes 'bordered', only one entry allowed												
1 GPS 2 3 4 5 6 GPS 7 8 9 10 GPS												
LEFT BANK Ring EC or SC if composed of sandy substrate												
Material NV, BE, BO, CO, CS, EA, PE, CL, CC, SP, WP, GA, BR, RR, TD, FA, BI												
Bank modification(s) NK, NO, RS, RI, PC(B), BM, EM												
Marginal & bank feature(s) NV, NO, EC, SC, PB, VP, SB, VS, NB												
CHANNEL GP- ring either G or P if predominant												
Channel substrate NV, BE, BO, CO, GP, SA, SI, CL, PE, EA, AR												
Flow-type NV, FF, CH, BW, UW, CF, RP, UP, SM, NP, DR												
Channel modification(s) NK, NO, CV, RS, RI, DA, FO												
Channel feature(s) NV, NO, EB, RO, VR, MB, VB, MI, TR												
For braided rivers only: number of sub-channels												
RIGHT BANK Ring EC or SC if composed of sandy substrate												
Material NV, BE, BO, CO, CS, EA, PE, CL, CC, SP, WP, GA, BR, RR, TD, FA, BI												
Bank modification(s) NK, NO, RS, RI, PC(B), BM, EM												
Marginal & bank feature(s) NV, NO, EC, SC, PB, VP, SB, VS, NB												
F BANKTOP LAND-USE AND VEGETATION STRUCTURE (to be assessed over a 10m wide transect)												
Land-use: choose one from BL, BP, CW, CP, SH, OR, WL, MH, AW, OW, RP, IG, TH, RD, SU, TL, IL, PG, NV												
LAND-USE WITHIN 5m OF LEFT BANKTOP												
LEFT BANKTOP (structure within 1m) B/U/S/C/NV												
LEFT BANK-FACE (structure) B/U/S/C/NV												
RIGHT BANK-FACE (structure) B/U/S/C/NV												
RIGHT BANKTOP (structure within 1m) B/U/S/C/NV												
LAND-USE WITHIN 5m OF RIGHT BANKTOP												
G CHANNEL VEGETATION TYPES (to be assessed over a 10m wide transect; use E (> 50% area) ✓ (present) or NV (not visible))												
None (✓) or Not Visible (NV)												
Liverworts/mosses/lichens												
Emergent broad-leaved herbs												
Emergent reeds/sedges/rushes/grasses/horsetails												
Floating-leaved (rooted)												
Free-floating												
Amphibious												
Submerged broad-leaved												
Submerged linear-leaved												
Submerged fine-leaved												
Filamentous algae												
Use end column for overall assessment over 500m, including types not occurring in spot-checks (use ✓, E or NV)												

Obr. 2 Formulář – část 2

SITE REF.		RIVER HABITAT SURVEY : 500m SWEEP-UP				Page 3 of 4	
H LAND-USE WITHIN 50m OF BANKTOP Use ✓ (present) or E (> 33% banklength)							
	L	R		L	R		
Broadleaf/mixed woodland (semi-natural) (BL)	E	F	Natural open water (OW)				
Broadleaf/mixed plantation (BP)			Rough/unimproved grassland/pasture (RP)				
Coniferous woodland (semi-natural) (CW)			Improved/semi-improved grassland (IG)				
Coniferous plantation (CP)			Tall herb/rank vegetation (TH)	✓	✓		
Scrub & shrubs (SH)	✓	✓	Rock, scree or sand dunes (RD)				
Orchard (OR)			Suburban/urban development (SU)				
Wetland (e.g. bog, marsh, fen) (WL)		✓	Tilled land (TL)				✓
Moorland/heath (MH)			Irrigated land (IL)				
Artificial open water (AW)		✓	Parkland or gardens (PG)				
			Not visible (NV)				
I BANK PROFILES Use ✓ (present) or E (> 33% banklength)							
Natural/unmodified		L	R	Artificial/modified		L	R
Vertical/undercut		E	E	Resectioned (reprofiled)			
Vertical with toe				Reinforced - whole			
Steep (>45°)				Reinforced - top only			
Gentle				Reinforced - toe only			
Composite				Artificial two-stage			
Natural berm				Poached bank			
				Embanked			
				Set-back embankment			
J EXTENT OF TREES AND ASSOCIATED FEATURES *record even if <1%							
TREES (tick one box per bank)				ASSOCIATED FEATURES (tick one box per feature)			
	Left	Right		None	Present	E (>33%)	
None	<input type="checkbox"/>	<input type="checkbox"/>	Shading of channel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Isolated/scattered	<input type="checkbox"/>	<input type="checkbox"/>	*Overhanging boughs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Regularly spaced, single	<input type="checkbox"/>	<input type="checkbox"/>	*Exposed bankside roots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Occasional clumps	<input type="checkbox"/>	<input type="checkbox"/>	*Underwater tree roots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Semi-continuous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fallen trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Continuous	<input type="checkbox"/>	<input type="checkbox"/>	Large woody debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
K EXTENT OF CHANNEL AND BANK FEATURES (tick one box for each feature) *record even if <1%							
	None	Present	E (>33%)	None	Present	E (>33%)	
*Free fall flow	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exposed bedrock	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chute flow	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exposed boulders	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Broken standing waves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vegetated bedrock/boulders	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Unbroken standing waves	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unvegetated mid-channel bar(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rippled flow	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vegetated mid-channel bar(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*Upwelling	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mature island(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smooth flow	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Unvegetated side bar(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No perceptible flow	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vegetated side bar(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No flow (dry)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unvegetated point bar(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marginal deadwater	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vegetated point bar(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eroding cliff(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	*Unvegetated silt deposit(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stable cliff(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	*Discrete unvegetated sand deposit(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				*Discrete unvegetated gravel deposit(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Obr. 3 Formulář – část 3

SITE REF.		RIVER HABITAT SURVEY : DIMENSIONS AND INFLUENCES		Page 4 of 4	
L CHANNEL DIMENSIONS (to be measured at one location on a straight uniform section, preferably across a riffle)					
LEFT BANK		CHANNEL		RIGHT BANK	
Banktop height (m)		Bankfull width (m)		Banktop height (m)	
Is banktop height also bankfull height? (Y or N)		Water width (m)		Is banktop height also bankfull height? (Y or N)	
Embanked height (m)		Water depth (m)		Embanked height (m)	
If trashline lower than banktop, indicate: height above water (m) = width from bank to bank (m) =					
Bed material at site is: consolidated <input type="checkbox"/> unconsolidated (loose) <input type="checkbox"/> unknown <input checked="" type="checkbox"/>					
Location of measurements is: riffle <input type="checkbox"/> other <input type="checkbox"/> (state)					
M FEATURES OF SPECIAL INTEREST Use ✓ or E (> 33% length) *record even if <1%					
None <input type="checkbox"/>		Very large boulders (>1m) <input type="checkbox"/>		Backwater(s) <input type="checkbox"/>	
Braided channels <input type="checkbox"/>		*Debris dam(s) <input type="checkbox"/>		Floodplain boulder deposits <input type="checkbox"/>	
Side channel(s) <input type="checkbox"/>		*Leafy debris <input type="checkbox"/>		Water meadow(s) <input type="checkbox"/>	
*Natural waterfall(s) > 5m high <input type="checkbox"/>		Fringing reed-bank(s) <input type="checkbox"/>		Fen(s) <input type="checkbox"/>	
*Natural waterfall(s) < 5m high <input type="checkbox"/>		Quaking bank(s) <input type="checkbox"/>		Bog(s) <input type="checkbox"/>	
Natural cascade(s) <input type="checkbox"/>		*Sink hole(s) <input type="checkbox"/>		Wet woodland(s) <input type="checkbox"/>	
				Marsh(es) <input type="checkbox"/>	
				Flush(es) <input type="checkbox"/>	
				Natural open water <input type="checkbox"/>	
				Others (state) <input type="checkbox"/>	
N CHOKED CHANNEL (tick one box)					
Is 33% or more of the channel choked with vegetation? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>					
O NOTABLE NUISANCE PLANT SPECIES Use ✓ or E (> 33% length) *record even if <1%					
None <input type="checkbox"/>		bankface banktop to 50m <input type="checkbox"/>		bankface banktop to 50m <input type="checkbox"/>	
*Giant hogweed <input type="checkbox"/>		*Himalayan balsam <input type="checkbox"/>		*Himalayan balsam <input checked="" type="checkbox"/>	
*Japanese knotweed <input type="checkbox"/>		*Other (state)..... <input type="checkbox"/>		*Other (state)..... <input type="checkbox"/>	
P OVERALL CHARACTERISTICS (Circle appropriate words, add others as necessary)					
Major impacts: landfill - tipping - litter - sewage - pollution - drought - abstraction - mill - dam - road - rail - industry - housing mining - quarrying - overdeepening - afforestation - fisheries management - silting - waterlogging - hydroelectric power					
Evidence of recent management: dredging - bank mowing - weed cutting - enhancement - river rehabilitation - gravel extraction - other (please specify)					
Animals: otter - mink - water vole - kingfisher - dipper - grey wagtail - sand martin - heron - dragonflies/damselflies					
Other significant observations: if necessary use separate sheet to describe overall characteristics and relevant observations					
Q ALDERS (tick one box in each of the two categories) *record even if <1%					
*Alders? None <input type="checkbox"/> Present <input type="checkbox"/> Extensive <input type="checkbox"/>			*Diseased Alders? None <input type="checkbox"/> Present <input type="checkbox"/> Extensive <input type="checkbox"/>		
R FIELD SURVEY QUALITY CONTROL (✓ boxes to confirm checks)					
Have you taken at least two photos that illustrate the general character of the site and additional photos of any weirs/ sluices and major/intermediate structures across the channel? <input type="checkbox"/>					
Have you completed all ten spot-checks and made entries in all boxes in E & F on page 2? <input type="checkbox"/>					
Have you completed column 11 of section G (and E if appropriate) on page 2? <input type="checkbox"/>					
Have you recorded in section C the number of riffles, pools and point bars (even if 0) on page 1? <input type="checkbox"/>					
Have you given an accurate (alphanumeric) grid reference for spot-checks 1, 6 and end of site (page 1)? <input type="checkbox"/>					
Have you stated whether spot-check 1 is at the upstream or downstream end of the site (top of page 2)? <input type="checkbox"/>					
Have you cross-checked your spot-check and sweep-up responses with the channel modification indicators given on page 2 of the spot-check key? <input type="checkbox"/>					

Obr. 4 Formulář – část 4

2) Vyhodnocení monitorovaného úseku

Dne 13. května 2015 šestičlenná skupina ve složení Tomáš Čejka, Jakub Černovský, Martin Harásek, Lukáš Patrnčíak, Jiří Stehno a Vojtěch Umlauf uskutečnila vyhodnocení úseku potoka Mlýnský náhon. Tento úsek patří mezi jedno z anastomózních koryt řeky Moravy v CHKO Litovelské Pomoraví. Vyhodnocení bylo provedeno z levého břehu. Výzkum probíhal v čase od 16:15 do 17:15.

V korytě nebyly rozpoznány mělčiny ani tůně, pozorované úseky působily poměrně monotónně. Typ proudění byl vyhodnocen nejčastěji jako s neporušenými vlnami a nezčeřeným povrchem vody. V důsledku zakalení vody plaveninami nebylo viditelné dno. Říční břehy byly z velké části tvořeny písčítými šterky a kameny. Břehy vodního toku byly poměrně výrazně pokryty vegetací. Jednalo se hlavně o bylinné patro, v některých z 10 pozorovacích míst bylo i více stromů. Pokrytí břehů vegetací je stabilizuje vůči případné boční erozi. Podél břehů se vyskytuje invazní netýkavka malokvětá nebo žláznatá? (*Impatiens parviflora*). Z hlediska ochrany přírody je důležité snažit se zabránit šíření tohoto druhu. Porost byl v některých úsecích velmi hustý, z místa pozorování proto nebyla část vodního toku viditelná. V samotném vodním toku byly spatřeny řasy v některých částech.

Monitorovaný úsek koryta jsme zhodnotili stupněm 3. Koryto se zdálo být poměrně přírodě blízké, nicméně bylo v některých úsecích napřímené, tedy antropogenně modifikované. Napřímení koryta je chápáno spíše jako negativní, protože řeka může rychleji překročit kapacitu koryta. Když by vodní tok více meandroval, spotřebovala by se větší část jednotkové energie vodního toku na erozi břehů. Naopak v případě výrazného podemletí břehů by mohlo dojít k sesuvu břehů nebo odvalovému říčení. Těžko rozhodnout, jestli by se vyplatila revitalizace vodního úseku. Z estetického hlediska by se rozhodně zvýšila atraktivita vodního toku a více by se „hodil“ do CHKO Litovelské Pomoraví. Mnohem důležitějším hlediskem je samozřejmě ochrana obyvatel před povodněmi. V případě intenzivních dešťů je pravděpodobné, že by mohlo dojít k vylití vody z koryta. V takovém případě je možným řešením např. postavení ochranných valů v okolí obcí, jak jsme ostatně v jiné části CHKO viděli.